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Test Tools Catalog 2008

Fluke. *Keeping your world up and running.®*

Fluke Corporation
P.O. Box 9090
Everett, WA USA 98206
Web: www.fluke.com

Fluke Europe B.V.
P.O. Box 1186
5602 BD Eindhoven
The Netherlands
Web: www.fluke.eu

For more information call:
In the U.S.A. (800) 443-5853
or Fax (425) 446 -5116
In Europe/M-East/Africa +31 (0)40 2 675 200
or Fax +31 (0)40 2 675 222
In Canada (905) 890-7600
or Fax (905) 890-6866
From other countries +1 (425) 446 -5500
or Fax +1 (425) 446 -5116

Fluke (UK) Ltd.
52 Hurricane Way
Norwich
Norfolk
NR6 6JB
United Kingdom

Tel.: (020) 7942 0700
Fax: (020) 7942 0701
E-mail: industrial@uk.fluke.nl
Web: www.fluke.co.uk

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2008

Test Tools Catalog

- Digital Multimeters
- Clamp Meters
- Electrical Testers
- Insulation Testers
- Earth Ground Testers
- Installation Testers
- Portable Appliance Testers
- Digital Thermometers
- Thermal Imagers
- Indoor Air Quality Tools
- ScopeMeter® Test Tools
- Power Quality Tools
- Field Calibrators
- EX Test Tools
- Accessories

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Fluke. *Keeping your world up and running.®*

Fluke Web and Electronic Newsletter

Fluke web

Complete information
The most complete and in-depth resource for information on Fluke's products and services including:
- Product information
- Interactive selection guides
- Virtual product demonstrations
- Extended specifications
- Application notes
- Product manuals
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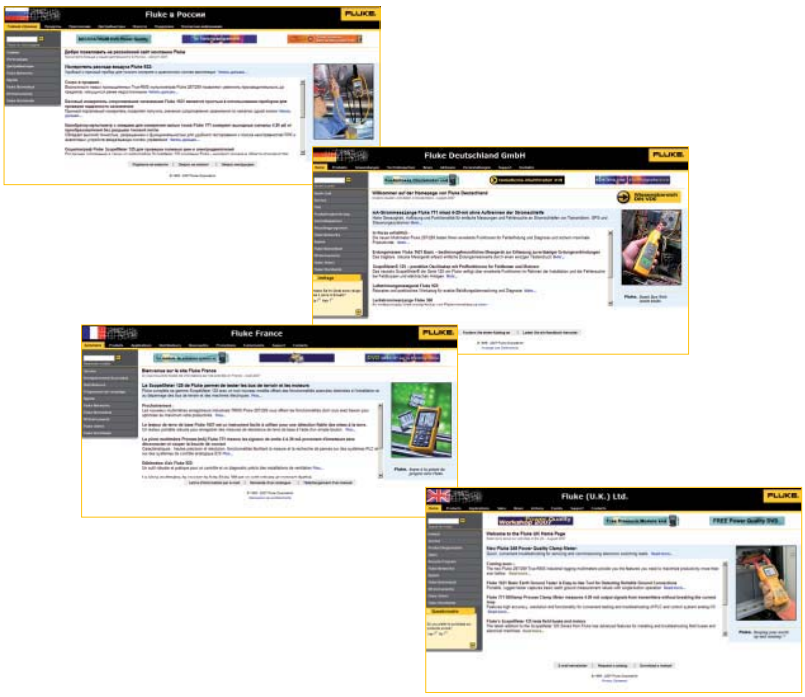

Fluke web sites are available in all countries around the world and in 14 different languages.

Electronic Newsletter

E-Test-it! is Fluke's regular news publication for professional test tool users. It is electronically available 6 times per year. You will be the first to hear about:

- New Fluke products
- The latest actions and promotions from Fluke
- How to get more out of Fluke tools
- How to use Fluke tools better in your application
- Exclusive offers, promotions and discounts on Fluke Merchandizing
- Exclusive offers on Fluke ex-demo equipment

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Try it now and sign-up for your FREE e-Test-it! subscription.
Go to the Fluke web site and fill in the on-line subscription form.

New from Fluke

Fluke 287/289 True RMS Logging Multimeters

The new Fluke 289 and Fluke 287 industrial logging multimeters include higher accuracy and greater troubleshooting convenience to help you to solve problems faster and minimize downtime, while working at several locations at the same time.

See page 13.

Fluke 8808A 5 ½ Digit Multimeter

The Fluke 8808A is the versatile multimeter for manufacturing, development and service applications. It delivers a wide variety of measurement functions, including volts, ohms and amps, plus frequency, all at superior accuracy and resolution.

See page 20.

Fluke 353 and 355 True-rms Clamp Meters

The Fluke 350 series are versatile and rugged tools for applications with high currents up to 2000 A. They feature an extra wide Jaw for large conductors and have a 600 V CAT IV and 1000 V CAT III rating for added user protection.

See page 24.

Fluke 1621 Earth Ground Tester

The Fluke 1621 is the first line in defense in detecting reliable ground connections. The unit features basic ground testing methods including 3-pole Fall-of-Potential as well as 2-pole ground resistance.

See page 37.

Fluke 566/568 Multipurpose Thermometers

These new handheld thermometers combine contact and non-contact temperature measurement capability with a menu-based, multi-language user interface to enable even complex measurements quickly and easily.

See page 49.

Fluke Ti10/Ti25 Thermal Imagers

The Fluke Ti10/Ti25 are the perfect tools to add to your problem solving arsenal. Built for tough work environments, these high-performance, fully radiometric imagers are ideal for troubleshooting electrical systems, electro-mechanical equipment, process equipment, HVAC/R equipment and others.

See page 54.

New from Fluke

Fluke TiR Series Thermal Imagers

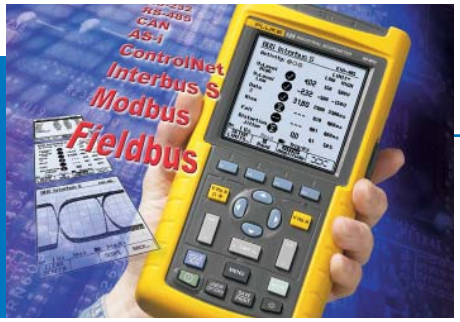
The affordable rugged Fluke TiR1 and TiR Thermal Imagers are workhorse tools for the demands of building envelope, restoration and remediation, inspection and roofing applications. The TiR2, TiR3 and TiR4 IR Flexcam® Thermal Imagers are the expert's choice for building diagnostics.

See page 58.

Fluke 922 Airflow Meter

The Fluke 922 makes airflow measurements easy by combining pressure, air flow, and velocity into a single, rugged meter. Compatible with most Pitot tubes the Fluke 922 allows technicians to conveniently enter their duct share and dimensions for maximum measurement accuracy.

See page 61.



Fluke ScopeMeter 125

This latest addition to the ScopeMeter 120 Series has advanced features for installing and troubleshooting field buses and electrical machines. The ScopeMeter 125 performs a bus health test on industrial buses. The test quickly determines whether the bus is working and if not, helps to identify the cause.

See page 68.

Fluke VR1710 Plug-in Voltage Quality Recorder

This new single-phase troubleshooting tool provides an extremely easy-to-use solution for detecting and recording power quality parameters including RMS average, transients, flicker, and harmonics over a user-selected time period from 3 seconds to 10 minutes.

See page 79.

Fluke Norma 4000/5000 Series

For easy and reliable use in the field or as a bench unit in laboratories and test benches, the new Fluke Norma 4000 and Fluke Norma 5000 power analyzers deliver high precision measurements for the development and test of electrical equipment.

See pages 81 and 82.

Fluke 914X/418X Field Metrolgy Wells/ IR Calibrators

The Fluke 914x Series Field Metrology Wells extend high performance portable temperature calibration to the industrial process environment. The Fluke 418X IR Calibrators offer exceptional performance backed up by robust metrology.

See page 89.

Application/ background articles

As part of our commitment to supporting you in your work we do more than just design and manufacture rugged and versatile test tools: we also provide detailed background information to help you choose the right instrument and offer advice on using it effectively and safely. You can download all Application Notes from our web site.

Why True RMS ?

Can you trust your meter reading ?

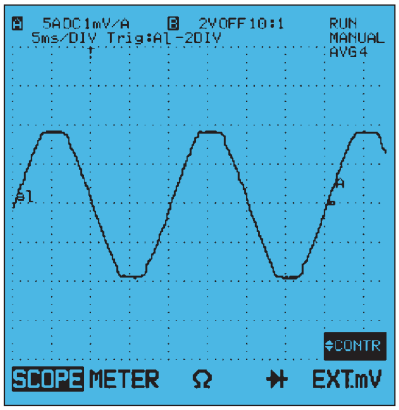


Fig 1. Current waveform of a linear load.

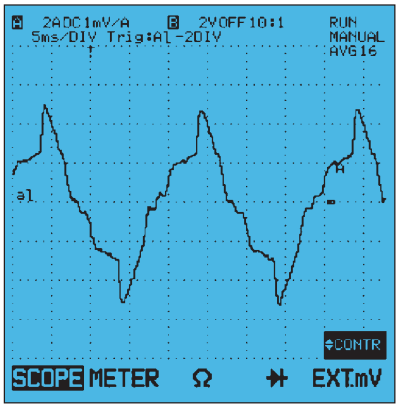


Fig 2. Current waveform of a non-linear load.

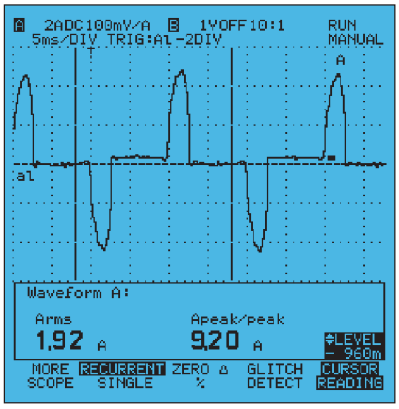


Fig 3. Current waveform of a PC.

True RMS

Measuring accurately is a difficult job in today's industrial plants and offices.
More and more personal computers, adjustable speed drives and other types of equipment that draw current in short pulses rather than at a steady level come on line every day.
Equipment like this can cause the readings of conventional average-responding meters to be at least inaccurate. If you have ever experienced blown fuses without any clear cause, then maybe your meter is to blame.

Average-responding

When people talk about values of AC currents, they normally mean the effective heating or RMS (Root Mean Square) value of the current. This value is equivalent to a DC current with the same heating value as the AC current which is being measured. The most common way to measure this RMS value with a meter is to rectify the AC current, determine the average value of this rectified signal and then multiply the result by a factor 1.1. This factor represents the constant relationship between the average and RMS values of a perfect sinewave. However, if the waveform is not a perfect sinewave, this relationship no longer applies. This is why average responding meters often give incorrect readings when measuring currents in today's power systems.

Linear and non-linear loads

Linear loads – consisting purely of resistors, coils and capacitors – always draw a sinewave current, so there is no measurement problem (see fig.1). But non-linear loads like adjustable frequency drives and office equipment power supplies, draw distorted current waveforms (see fig 2 and 3).
Measuring the RMS value of these distorted currents with an average-responding meter could give you readings which are up to 50% too low (see fig. 4), leaving you wondering why your 14A fuse blows continuously while the current according to your meter is only 10A.

True RMS

To measure such distorted current waveforms, you could first check the waveform with a waveform capturing device, and only use an average responding meter if the waveform is a perfect sinewave.
Or alternatively you could take no chances by always using a true RMS meter.
A modern true RMS meter uses an electronic measurement technique to provide you with the real effective value of an AC current, no matter if the waveform of the current is a perfect sinewave or a distorted waveform. As long as it is within the meter's crest factor and bandwidth specification.

What about voltage measurements?

What is valid for current measurements in today's power systems also is true for voltage measurements in many industrial and electronic applications. Often voltage waveforms are not perfect sinewaves which will result in incorrect readings with average responding meters. Therefore it is recommended to always use True-RMS responding meters for both voltage and current measurements.

Type Of Meter	Measuring Circuit	Response To Sine Wave	Response To Square Wave	Response To Distorted Wave
Average-responding	Multiplies rectified average by 1.1	Correct	10% high	Up to 50% low
True-RMS-responding	RMS-calculating converter calculates heating value	Correct	Correct	Correct

Fig 4. Comparing the Performance of Average-Responding and True-rms Responding Meters.

Fluke: Where safety is built in

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Electrical Safety

As distribution systems and loads become more complex, the possibilities of transient overvoltages increase. Motors, capacitors and power conversion equipment such as variable speed drives can be prime generators of spikes. Lightning strikes on outdoor transmission lines also cause extremely hazardous high-energy transients. If you're taking measurements on electrical systems, these transients are "invisible" and largely unavoidable hazards. They occur regularly on low-voltage power circuits, and can reach peak values in the many thousands of volts. To protect you against transients, safety must be built into the test equipment.

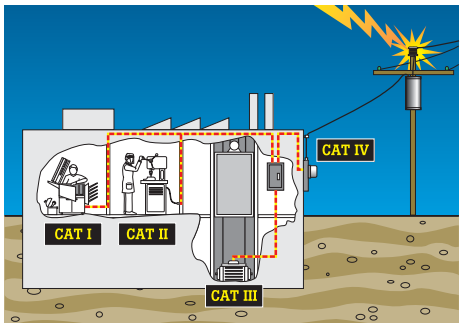


Figure 1. Understanding categories: location

Who Develops Safety Standards?

The IEC (International Electrotechnical Commission) develops international general standards for safety of electrical equipment for measurement, control and laboratory use. IEC61010-1 is used as the basis for the following national standards:

- US ANSI/ISA-S82.01-94
- Canada CAN C22.2 No.1010.1-92
- Europe EN61010-1:2001

Overvoltage Installation Categories

IEC61010-1 specifies categories of overvoltage based on the distance the piece of equipment is from the power source (see Fig. 1 and Table 1) and the natural damping of transient energy that occurs in an electrical distribution system. Higher categories are closer to the power source and require more protection.
Within each installation category there are *voltage* classifications. It is the combination of installation category and voltage classification which determines the maximum transient withstand capability of the instrument.

IEC 61010 test procedures take into account three main criteria: steady-state voltage, peak impulse transient voltage and source impedance. These three criteria together will tell you a multimeter's *true voltage withstand value.*

Within a category, a higher working voltage" (steadystate voltage) is associated with a higher transient, as would be expected. For example, a CAT III 600 V meter is tested with 6000 V transients while a CAT III 1000 V meter is tested with 8000 V transients.
So far, so good. What is not as obvious is the difference between the 6000 V transient for CAT III 600 V and the 6000 V transient for CAT II 1000 V. They are not the same.

This is where the source impedance comes in. Ohm's Law (Amps = Volts/Ohms) tells us that the 2 K test source for CAT III has six times the current of the 12 K test source for CAT II. The CAT III 600 V meter clearly offers superior transient protection compared to the CAT II 1000 V meter, even though its so-called "voltage rating" could be perceived as being lower. See Table 2.

Independent testing is the key to safety compliance

How can you tell if you're getting a genuine CAT III or CAT II meter? Unfortunately it's not always that easy. It is possible for a manufacturer to self-certify that its meter is CAT II or CAT III *without any independent verification*. The IEC (International Electrotechnical Commission) develops and proposes standards, but it is not responsible for enforcing the standards. Look for the symbol and listing number of an independent testing lab such as UL, CSA, VDE, TÜV or other recognized approval agency.

These symbols can only be used if the product successfully completed testing to the agency's standard, which is based on national/-international standards. UL 3111, for example, is based on EN61010-1. In an imperfect world, this is the closest you can come to ensuring that the meter you choose was actually *tested* for safety.

Table 1

Overvoltage category	In brief	Examples
CAT IV	Three-phase at utility connection, any outdoor conductors	• Refers to the "origin of installation"; i.e., where low-voltage connection is made to utility power. • Electricity meters, primary overcurrent protection equipment. • Outside and service entrance, service drop from pole to building, run between meter and panel. • Overhead line to detached building, underground line to well pump.
CAT III	Three-phase distribution, including single-phase commercial lighting	• Equipment in fixed installations, such as switchgear and polyphase motors. • Bus and feeder in industrial plants. • Feeders and short branch circuits, distribution panel devices. • Lighting systems in larger buildings. • Appliance outlets with short connections to service entrance.
CAT II	Single-phase receptable connected loads	• Appliance, portable tools, and other household and similar loads. • Outlet and long branch circuits. • Outlets at more than 10 meters (30 feet) from CAT III source. • Outlets at more than 20 meters (60 feet) from CAT IV source.
CAT I	Electronic	• Protected electronic equipment. • Equipment connected to (source) circuits in which measures are taken to limit transient overvoltages to an appropriately low level. • Any high-voltage, low-energy source derived from a high-winding resistance transformer, such as the high-voltage section of a copier.

Overvoltage installation categories. IEC 61010-1 applies to low-voltage (< 1000V) test equipment

Fluke: Where safety is built in

Safety is everyone's responsibility but ultimately it is in your hands. No tool by itself can guarantee your safety when working with electricity. It's the combination of the right tools and safe work practices that gives you maximum protection. Here are a few tips to help you in your work:

Make sure you always comply with (local) regulations.

Work on de-energized circuits whenever possible.
Use proper lock-out/tag-out procedures. If these procedures are not in place or enforced, assume that the circuit is live.

Use protective gear when working on live circuits:

- Use insulated tools
- Wear safety glasses or a face shield
- Wear insulated gloves, remove watches or jewelry
- Stand on an insulated mat
- Wear flame resistant clothing, not ordinary work clothes

Use protective equipment such as safety glasses and insulated gloves

Use meters with these markings: 1000 V CAT III or 600 V CAT IV

Select the right test tool:

- Choose a test tool rated to the highest category and voltage for which it could possibly be used (most often 600 or 1000 volt CAT III and/or 600 volt CAT IV).
- Look for the category and voltage marking near the recessed input connectors of your test tool and a "double insulated" symbol on the back.
- Verify your test tool has been tested and certified by two or more independent testing laboratories, such as UL in the United States and VDE or TüV in Europe by looking for the symbols of these agencies on (the back of) your test tool.
- Make sure that the test tool is made of a high-quality, durable non-conductive material.
- Check the manual to verify that the ohms, continuity and capacitance circuits are protected to the same level as the voltage test circuit, to reduce hazards when the test tool is used incorrectly in ohms, continuity or capacitance mode (if applicable).
- Verify that the test tool has internal protection to prevent instrument damage when voltage is incorrectly applied to an amperage measurement function (if applicable).
- Make sure that the amperage and voltage of your test tool's fuses meets specifications. Fuse voltage must be as high or higher than the test tool's voltage rating.
- Be sure to use test leads that have:
  - Shrouded connectors
  - Finger guards and a non-slip surface
  - Category ratings that equal or exceed those of the test tool
  - Double insulation (look for the symbol)
  - A minimum of exposed metal on the probe tips

Inspect and test your test tool:

- Check for a broken case, worn test leads or a faded display.
- Make sure the batteries still deliver sufficient power to get reliable readings. Many test tools have a low battery indicator on the display.
- Check the test leads resistance for internal breaks while moving the leads around (good leads measure 0.1–0.3 Ohm).
- Use the meter's own test capability to ensure that the fuses are in place and working right (see manual for details).

Apply the appropriate working practices when measuring on live circuits:

- Hook on the ground clip first, then make contact with the hot lead. Remove the hot lead first, the ground lead last.
- Use the three-point test method, especially when checking to see if a circuit is dead. First test a known live circuit. Second, test the target circuit. Third, test the live circuit again. This verifies that your test tool worked properly before and after the measurement.
- Hang or rest the test tool if possible. Try to avoid holding it in your hands, to minimize personal exposure to the effects of transients.
- Use the old electrician's trick of keeping one hand in your pocket. This lessens the change of a closed circuit across your chest and through your heart.

For more information or to request the Electrical Safety DVD go to:
United Kingdom: **www.fluke.co.uk/safety**
Ireland: **www.fluke.ie/safety**
E-Europe/Middle-East/Africa: **www.fluke.nl/safety_ex**

Table 2

Overvoltage Installation Category	Working Voltage (DC or AC RMS to ground)	Peak Impulse Transient (20 repetitions)	Test Source (K = V/A)
CAT I	600 V	2500 V	30 Ohm source
CAT I	1000 V	4000 V	30 Ohm source
CAT II	600 V	4000 V	12 Ohm source
CAT II	1000 V	6000 V	12 Ohm source
CAT III	600 V	6000 V	2 Ohm source
CAT III	1000 V	8000 V	2 Ohm source
CAT IV	600 V	8000 V	2 Ohm source

Transient test values for overvoltage installation categories. (50 V/150 V/300 V values not included)

Troubleshooting Adjustable Speed Drives

FLUKE®

Adjustable Speed Drives (ASDs) deliver huge benefits to industry. They save energy, enable more precise process control and help motors and equipment last longer. However ASDs also cause real difficulties for service engineers. The electrical troubleshooting of a drive can be difficult since most measurement equipment is not designed to handle the complex output signals of the drive.

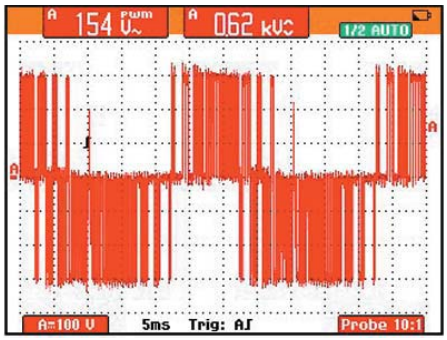


Figure 1. Motor drive output measured using the Fluke ScopeMeter 199C

Figure 2. Output voltage reading without using the low pass filter.

Figure 3. Output voltage reading with low pass filter enabled.

The Pulse Width Modulated (PWM) signal

The basic problem comes from the pulse width modulated, high output voltage of the drive (see figure 1).

Many instruments have difficulties in handling this complex signal:

- The PWM signal is difficult to measure (this has been especially true for DMMs)
- The signal generates high rf noise, making readings unstable
- Safety norms require CAT III or even CAT IV rated measurement equipment.

Fluke has several instruments that now make the troubleshooting of ASDs easy:

Fluke Digital Multimeters

Many of today's true rms digital multimeters have bandwidths up to 20 kHz or more. So they respond not only to the fundamental component, which is what the motor responds to, but also to all the high frequency components generated by the PWM drive. If the DMM isn't shielded from high frequency noise, the drive controller's high noise levels make the measurement discrepancies even more extreme.

The Fluke 87V, 289 and 1587 solve this. These CAT IV rated meters have special shielding and a patented low pass filter that takes accurate motor measurements. The instrument helps troubleshoot the basic performance of an ASD by measuring the proper voltage and frequency on the motor terminals with the drive display, calculating the Volt-Herz product, measuring the DC Bus ripple, and more.

Fluke ScopeMeter®

The Fluke ScopeMeter 190 Series and ScopeMeter 125 are ideal for further analyzing problems with pulse-width-modulated variable speed drives. They feature a special Vpwm function that measures the voltage actually applied to motor whilst simultaneously measuring the frequency.

The ScopeMeter also provides Connect-and-View™ triggering which automatically displays a stable picture of the real signal.

Other Fluke tools

Many ASDs operate in an industrial environment, where large loads and load changes can result in poor power quality. Often, the performance of ASDs may be impaired by this. Fluke's range of power quality products helps to locate and prevent problems in power distribution systems to keep ASDs running smoothly.

Measuring current is very important when servicing ASDs and motors. One of the more common tools used for this is the current clamp. However, many ASDs are located in areas needing CAT IV safety rated equipment. Fluke's i400s and i400 current clamps are the first to be CAT IV rated. The 400 A range and small overall size also make them ideal for measuring ASD and motor currents.

For more information download the Application Notes from our web site or request a copy from our local sales office.

There are three Application Notes available:

- Multimeter measurements on adjustable speed drives using the Fluke 87V Digital Multimeter.
- Measuring variable speed-motor drive output voltage with a Fluke ScopeMeter® 190 Series.
- Troubleshooting in 3-phase power networks with the Fluke 430 Series Power Quality Analyzers.

Basic electrical installation testing

Growing concern for public safety and the increasing complexity of today's fixed electrical installations in domestic, commercial and industrial premises places extra responsibility on electrical test engineers who are charged with verifying conformity to today's stringent international standards.

It is therefore important to have suitable test tools for carrying out the stringent tests imposed by the International Electrotechnical Commission (IEC) and the European Committee for Electrotechnical Standardization (CENELEC). IEC 60364, and its various associated national equivalent standards that are published throughout Europe (see table 1), specifies the requirements for fixed electrical installations in buildings. Section 6.61 of this standard describes the requirements for the verification of the compliance of the installation with IEC 60364.

The basic requirements of IEC 60364.6.61

Many electrical contractors may already be familiar with IEC 60364.6.61 or its national equivalents. It states that verification of the installation shall be carried out in the following sequence:

1. Visual inspection
2. Testing of the following:
   - continuity of protective conductors;
   - insulation resistance;
   - protection by separation of circuits;
   - floor and wall resistance;
   - automatic disconnection of supply;
     - measurements of earth electrode resistance
     - measurements of fault loop impedance
     - testing RCDs
   - polarity;
   - functional performance

To test the protective measures as described above, IEC 60364.6.61 refers to the IEC / EN 61557.

The basic requirements of IEC/EN 61557

The European Norm EN 61557 addresses the requirements for test equipment used in installation testing. It consists of general requirements for test equipment (part 1), specific requirements for combined measuring equipment (part 10) and covers the specific requirements for measuring/-testing:

1. Insulation resistance (part 2)
2. Loop impedance (part 3)
3. Resistance of the earth connection (part 4)
4. Resistance to earth (part 5)
5. RCD performance in TT and TN systems (part 6)
6. Phase sequence (part 7)
7. Insulation monitoring devices for IT systems (part 8)

The Fluke 1650 Series multifunction installation testers are measuring equipment as described in part 10 of EN 61557 and the three different models in the series comply with specific parts of this norm. They are specifically designed to carry out the tests specified in IEC 60364.6.61, and all local standards/regulations derived from it, in the safest and most efficient way. They are lightweight, and feature a unique ergonomic 'curved' form that, when carried by the neck strap, makes operation in the field more comfortable.

Table 1

European equivalents of IEC 60364 (6.61)	
Austria	ÖVE/ÖNORM E8001
Belgium	A.R.E.I. / R.G.I.E.
Czech Republic	ČSN 33 2000-6-61
Denmark	Stærkstrømbekendtgørelsen 6
Finland	SFS 6000
France	NF C 15-100
Germany	DIN VDE 0100
Italy	CEI 64-8
Netherlands	NEN 1010
Norway	NEK 400
Portugal	HD 384
Slovenia	STN 33 2000-6-61
Spain	UNE 20460
Sweden	SS 4364661 / ELSÄK-FS 1995:5
Switzerland	NIN / SN SEV 1000
UK	BS 7671 / 16th Edition IEE Wiring Regulations

For more information download the Application Note "Basic Electrical Installation Testing" from our web site or request a copy from our local sales office. (pub_ID: 10641).

Digital Multimeters

Safety, quality and performance: three words that sum up the benefits of our extensive range of digital multimeters. Designed to help you do your job faster, more efficiently and with greater accuracy, there is a model for every budget and application. Choose from handheld troubleshooters to ultra smart instruments packed with features, including the ability to log and graph data, as well as high-precision bench units.

DMM Selection guide

	Highest accuracy		High-end Industrial		Industrial maintanance and field service			Electrical	HVAC/R	Field Service	Basic Electrical	General Purpose	Heavy duty	Auto-motive	Loop calibration		Insulation test	
Basic features	**289**	**287**	**87V**	**83V**	**179**	**177**	**175**	**117**	**116**	**115**	**114**	**77IV**	**27**	**88V**	**789**	**787**	**1587T**	**1577**
Counts	50000	50000	20000	6000	6000	6000	6000	6000	6000	6000	6000	6000	3200	20000	4000	4000	6000	6000
True RMS readings	AC+DC	AC+DC	AC		AC	AC	AC	AC	AC	AC	AC				AC	AC	AC	AC
Basic DC accuracy	0.025%	0.025%	0.05%	0.1%	0.09%	0.09%	0.15%	0.5%	0.5%	0.5%	0.5%	0.3%	0.1%	0.1%	0.1%	0.1%	0.09%	0.2%
Wide bandwidth	100kHz	100kHz	20 kHz	5 kHz									30 kHz					
Auto/manual ranging	●/●	●/●	●/●	●/●	●/●	●/●	●/●	●/●	●/●	●/●	●/●	●/●	●/●	●/●	●/●	●/●	●/●	●/●
Measurements																		
Voltage AC/DC	1000 V	1000 V	1000 V	1000 V	1000 V	1000 V	1000 V	600 V	600 V	600 V	600 V	1000 V	1000 V	1000 V	1000 V	1000 V	1000 V	1000 V
Current AC/DC	10 A	10 A	10 A	10 A	10 A	10 A	10 A	10 A	200 µA	10 A		10 A	10 A	10 A	1 A	1 A	400 mA	400 mA
Resistance	500 MK	500 MK	50 MK	50 MK	50 MK	50 MK	50 MK	40 MK	40 MK	40 MK	40 MK	50 MK	32 MK	50 MK	40 MK	40 MK	50 MK	50 MK
Frequency	1 MHz	1 MHz	200 kHz	200 kHz	100 kHz	100 kHz	100 kHz	50 kHz	50 kHz	50 kHz		100 kHz		200 kHz	20 kHz	20 kHz	100 kHz	
Capacitance	100 mF	100 mF	10 mF	10 mF	10 mF	10 mF	10 mF	10 mF	10 mF	10 mF		10 mF		10 mF			10 mF	
Temperature	+1350°C	+1350°C	+1090 °C		+400 °C				+400 °C					+1090 °C			+500 °C	
dB	60 dB	60 dB																
Conductance	50 nS	50 nS	60 nS	60 nS									32 nS	60 nS				
Duty cycle/pulse width	●/●	●/●	●/-	●/-										●/●				
Continuity with beeper	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Diode test	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	
4–20mA loop current as % readout															●	●		
Motor drive measurement	●		●														●	
RPM / Dwell														●/-				
VoltAlert™, Non-contact voltage detection								●										
LoZ: low input impedance	●							●	●		●							
Microamps	●	●	●	●					●									
Insulation test																	●	●
Number of insulation test ranges																	5	2
Display																		
Dual display	●	●													●	●		
Analog bargraph	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
Backlight	●	●	●	●	●	●		●	●	●	●	●		●	●	●	●	●
Data storage and exchange																		
Min-Max recording/with time stamp	●/●	●/●	●/-	●/-	●/-	●/-	●/-	●/-	●/-	●/-	●/-	●/-	●/-	●/-	●/-	●/-	●/-	
Fast Min-Max	250 µs	250 µs	250 µs											250 µs				
Display Hold/Auto (Touch) Hold	●/●	●/●	●/●	●/●	●/●	●/●	●/●	●/-	●/-	●/-	●/-	-/●	-/●	●/●	-/●	-/●	●/●	
Relative	●	●	●	●									●	●	●	●		
Stand alone logging/TrendCapture	●/●	●/●																
USB interface/RS232 interface	●/●	●/●													●/●			
Readings memories	10000	10000																
Other features																		
Source 4–20mA loop current/24V loop supply															●/ ●	●/-		
Automatic selection, AC/DC Volts								●	●		●							
Real time clock	●	●																
Smoothing					●	●	●										●	
Integrated holster	●	●			●	●	●					●			●			
Removable holster			●	●				●	●	●	●			●		●	●	●
Closed case calibration	●	●	●	●	●	●	●	●	●	●	●	●		●	●		●	●
Separate battery/fuse access	●/●	●/●	●/-	●/-	●/●	●/●	●/●	●/-	●/-	●/-	●/-		●/●	●/-	●/●	●/-	●/●	●/●
Automatic power off	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●
Low battery indication	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Warranty and safety																		
Lifetime warranty/warranty (years)	●	●	●	●	●	●	●	3	3	3	3	●	●	●	3	3	3	3
Input alert	●	●	●	●										●				
Dangerous voltage indication	●	●	●	●	●	●	●	●	●	●	●	●	●	●			●	●
EN61010-1 CAT II																		
EN61010-1 CAT III	1000 V	1000 V	1000 V	1000 V	1000 V	1000 V	1000 V	600 V	600 V	600 V	600 V	1000 V	1000 V	1000 V	1000 V	1000 V	1000 V	1000 V
EN61010-1 CAT IV	600 V	600 V	600 V	600 V	600 V	600 V	600 V					600 V		600 V			600 V	600 V
See catalog page	13	13	14	14	15	15	15	16	16	16	16	17	17	18	93	93	33	33

FLUKE®

Fluke Combo Kits

Buy a Combo Kit and save

Fluke 87V/E2 Industrial Electrician Combo Kit

- Fluke 87V True RMS Multimeter
- TL224 SureGrip™ Silicone Test Lead Set
- TP38 Slim Reach Test Probe Set (insulated)
- AC220 SureGrip™ Alligator Clip Set
- TPAK Magnetic Hanger
- 80BK Integrated DMM Temperature Probe
- C35 Soft Meter Case

Fluke 179/EDA2 Kit Electronics Combo Kit

- Fluke 179 True RMS Multimeter
- TL224 SureGrip™ Silicone Test Lead Set
- TL910 Electronic Test Probe Set
- AC280 SureGrip™ Hook Clip Set
- TPAK Magnetic Hanger
- 80BK Integrated DMM Temperature Probe
- C35 Soft Meter Case

Fluke 179/MAG2 Kit Industrial Combo Kit

- Fluke 179 True RMS Multimeter
- TL224 SureGrip™ Silicone Test Lead Set
- AC220 SureGrip™ Alligator Clip Set
- TP4 Slim Reach Test Probe Set (4 mm)
- TPAK Magnetic Hanger
- 80BK Integrated DMM Temperature Probe
- C35 Soft Meter Case
- + Maglite flashlight

Fluke 117/322 Kit Electrician's Combo Kit

- Fluke 117 True RMS Multimeter
- Fluke 322 Clamp Meter
- TL75 Hard Point Test Lead Set
- TPAK Magnetic Hanger
- C115 Deluxe carrying case with shoulder strap

Fluke 87V/i410 Combo Kit for Industrial Applications

- 87V Industrial Multimeter
- TL75 Test Leads
- AC72 Alligator Clips
- i410 400A AC/DC Current Clamp
- 80BK Temperature Probe
- C115 Soft Carrying Case

(Not available in all countries)

Fluke 289/FVF Industrial Logging Multimeter and Software Combo Kit

- Fluke 289 True-RMS Multimeter
- FVF-SC2 FlukeView Forms Software and cable
- TL71 Silicon Test Lead Set
- AC72 Alligator Clips
- 80BK-A Integrated DMM Temperature Probe
- TPAK Magnetic Meter Hanger for hands-free operation
- C280 Soft Case for meter protection and accessory storage

Ordering Information

Fluke 87V/E2	Industrial Electrician Combo Kit
Fluke 179/MAG2 Kit	Industrial Combo Kit
Fluke 179/EDA2 Kit	Electronics Combo Kit
Fluke 117/322 Kit	Electrician's Combo Kit
Fluke 87V/i410	Combo Kit for Industrial Applications
Fluke 289/FVF	Industrial Logging Multimeter and Software Combo Kit

280 Series Digital Multimeters

FLUKE®

Fluke 289

New

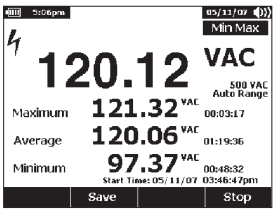
Fluke 287

Advanced diagnostic and logging functionality for maximizing productivity

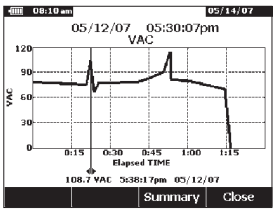
The new Fluke 289 and Fluke 287 represent the next generation of high-performance industrial logging multimeters, including higher accuracy and greater troubleshooting convenience than ever before. With the ability to log data and review it graphically on the large display, you can solve problems faster and help minimize downtime, while working at several locations.

- Large 50,000 count 320 x 240 (1/4 VGA) dot matrix display
- Logging function with TrendCapture for easy review of logged data
- Multiple readings per display provide more information at a glance
- "I"-info button for convenient on-board help
- PC interface for easy data transfer

In addition, the Fluke 289 provides:
- Lo Pass filter for motor drive measurements
- LoZ – Low impedance function prevents false "ghost voltage" readings
- 50 K range for motor winding and low ohm measurements



See Minimum, Maximum & Average Values



View logged data graphically on screen

Lifetime Warranty!

CAT III 1000V
CAT IV 600V

LISTED UL · CSA · TÜV PRODUCT SERVICE · GS · True RMS

Included Accessories

TL71 silicone test leads, probe holder, 6 AA batteries (installed), user manual, Calibration Certificate Sheet.

The Fluke 289/FVF kit comes with the Fluke 289 digital multimeter, TL71 silicon test leads, alligator clips, 80BK thermocouple, TPAK magnetic hanger, FlukeViewForms software and cable, and a soft protective storage case.

Ordering Information

Fluke 287	True-RMS Electronic logging multimeter with TrendCapture
Fluke 289	True-RMS Industrial logging multimeter with TrendCapture
Fluke 289/FVF	Industrial logging multimeter and Software Combo Kit
FVF-SC2	FlukeView Forms software including IR/USB cable

Features

	287	289 - 289/FVF
True-RMS measurements	AC, AC+DC	AC, AC+DC
Bandwidth (voltage/current)	100 kHz / 100 kHz	100 kHz / 100 kHz
Digital display counts (default/selectable)	50.000 / 50.000	50.000 / 50.000
Logging function with TrendCapture	●	●
Records events and trends	●	●
Internal memory	Up to 180 h	Up to 180 h
Saves measurements	●	●
Optical USB PC communications interface	●	●
Low input impedance function (LoZ)		●
Motor winding and low ohm measurement range		50 K
Low pass filter		●
Field upgradeable/expandable meter	●	●
Navigation keys	●	●
F1 – F4 soft keys/user function menus	●	●
I-info button/on board help screens	●	●
Multilingual interface	●	●
Saves preferred measurement setups	●	●
Current measurement: 20 A (30 seconds momentary; 10 A continuous)	●	●
Peak capture (records transients as fast as 250 µs)	●	●
Continuity measurement	●	●
Min / Max / Average with Time Stamp (records signal fluctuations)	●	●
IP Rating 54	●	●

Specifications

(Check the Fluke web for detailed specifications)

Functions	Maximum	Max. resolution	287 and 289**
Voltage DC	1000 V	1 µV	±(0.025% + 5)
Voltage AC	1000 V	1 µV	±(0.4% + 40)
Current DC	10 A	0.01 µA	±(0.15% + 2)
Current AC	10 A	0.0 1µA	±(0.7% + 5)
Temperature	-200 °C to 1350 °C	0.1 °C	±(1.0% + 1°C)
Resistance	500 MK	0.01 K	±(0.05% + 2)
Conductance	50 nS	0.01 nS	±(1.0% + 10)
Capacitance	100 mF	0.001 nF	±(1.0% + 5)
Frequency	1 MHz	0.01 Hz	±(0.005% + 1)

Accuracies are best accuracies for each function.
** 287 and 289 accuracy and resolution are stated for 50.000 counts.

Battery life: 50 hours minimum, 180 hours in logging mode
Size (HxWxD): 222 mm x 102 mm x 60 mm
Weight: 0,871 kg
Lifetime warranty

Recommended Accessories

TLK289
Industrial Test Lead Kit
See page 100

TL910
Electronic Test Lead Set
See page 99

TLK287
Electronic Test Lead Set
See page 99

TPAK
Meter Hanging Kit
See page 109

C781
Soft Meter Case
See page 106

80 Series V Digital Multimeters

FLUKE®

Fluke 87V

Fluke 83V

Fluke 87V Ex

Lifetime Warranty!

83V/87V

CAT III 1000V
CAT IV 600V

On all inputs

True RMS

not 87V Ex

Performance and accuracy for maximum industrial productivity

The Fluke 80 Series V have improved measurement functions, troubleshooting features, resolution and accuracy to solve more problems on motor drives, in plant automation, power distribution, and electro-mechanical equipment.

The Fluke 87V has a unique function for accurate voltage and frequency measurements on adjustable speed motor drives and other electrically noisy equipment. A built-in thermometer conveniently allows you to take temperature readings without having to carry a separate instrument. For 87V Ex see also page 96 and 97.

Features

	83V	87V / 87V Ex
True-RMS voltage and current for accurate measurements on non linear signals		●
Bandwidth (voltage/current)	5 kHz	20 kHz
Digital display counts (default/selectable)	6000	20000 / 6000
Selectable filter for accurate voltage and frequency measurements on motor drives		●
Large display with analog bargraph and 2 level bright white backlight	●	●
Auto and manual ranging for maximum flexibility	●	●
Built-in thermometer lets you carry one less tool		●
Peak capture to record transients as fast as 250 µs		●
Relative mode to remove test lead resistance from low ohms measurements	●	●
Min-Max-Average recording with Min/Max Alert to capture variations automatically	●	●
AutoHOLD® to capture stable readings avoiding noisy signals	●	●
Audible continuity, diode test and duty cycle	●	●
Input Alert	●	●
"Classic" design with new removable holster with built in test lead and probe storage	●	●
Improved selectable sleep mode for long battery life	●	●
Easy battery exchange without opening the complete case	●	●
ATEX safety rating Ex II 2 G Eex ia IIC T4		87V Ex

Specifications

(Check the Fluke web for detailed specifications)

Functions	Maximum Range	83V		87V/87V Ex*	
		Max. resolution	Accuracy	Max. resolution	Accuracy
Voltage DC	1000 V	0.1 mV	±(0.1%+1)	10 µV	±(0.05%+1)
Voltage AC	1000 V	0.1 mV	±(0.5%+2)	10 µV	±(0.7%+2)
Current DC	10 A **	0.1 µA	±(0.4%+2)	0.01 µA	±(0.2%+2)
Current AC	10 A **	0.1 µA	±(1.2%+2)	0.01 µA	±(1.0%+2)
Resistance	50 MK	0.1 K	±(0.4%+1)	0.01 K	±(0.2%+1)
Conductance	60 nS	0.01 nS	±(1.0%+10)	0.001 nS	±(1.0%+10)
Capacitance	9999 µF	0.01 nF	±(1.0%+2)	0.01 nF	±(1.0%+2)
Frequency	> 200 kHz	0.01 Hz	±(0.005%+1)	0.01 Hz	±(0.005%+1)
Temperature	-200 to 1090 °C	-		0.1 °C	1.0%
80BK temperature probe	- 40 to 260 °C	-		-	2.2 °C or 2%

Accuracies are best accuracies for each function.
* 87V accuracy is stated for 6000 counts and resolution for 20000 counts
** 20 A up to 30 seconds

Battery Life: Over 400 hours typical (alkaline).
Size (HxWxD):
200 mm x 95 mm x 48 mm

Weight: 0.6 kg
83V/87V: Lifetime Warranty
87V Ex: One Year Warranty

Included Accessories

TL75 test leads, AC72 alligator clips, yellow holster (H80M excl. TPAK), 80BK temperature probe (87V only), 9 V battery (installed), CD-ROM (user's manual and technical notes) and operator's guide.

Ordering Information

Fluke 83V	Multimeter
Fluke 87V	True RMS Multimeter
Fluke 87V Ex	Intrinsically safe True RMS multimeter
Fluke 87V/E2	Industrial Electrician Combo Kit See page 12

Recommended Accessories

(Not for hazardous zones)

C25
See page 106

TL238
See page 100

i410/i1010
See page 103

TPAK
See page 109

L215
See page 101

170 Series Digital Multimeters

FLUKE®

Versatile meters for field service or bench repair

These meters have the features needed to find most electrical, electro-mechanical and heating and ventilation problems. They are simple to use and have significant improvements over Fluke's original 70 Series like, True-RMS, more measurement functions, conformance to the latest safety standards, and a much larger display that's easier to view.

Fluke 179


Fluke 177


Fluke 175

Lifetime Warranty!

CAT III 1000V
CAT IV 600V
On all inputs

LISTED UL CSA TÜV PRODUCT SERVICE GS VDE True RMS

Features

	175	177	179
True-RMS measurements	AC	AC	AC
Digital display counts, updates 4 times per second	6000	6000	6000
Display backlight		●	●
Analog bargraph / segments, updates 40 times per second	33-segments	33-segments	33-segments
Auto and Manual ranging	●	●	●
Display Hold and AutoHOLD®	●	●	●
Min-Max-Average recording mode with Min/Max Alert	●	●	●
Temperature readings (bead thermocouple probe included)			●
Smoothing mode allows filtering of rapidly changing inputs	●	●	●
Audible continuity and diode test	●	●	●
Test lead alert	●	●	●
Unsafe voltage alert warns for voltages above 30V	●	●	●
Low battery indication	●	●	●
Ergonomic case with integrated holster	●	●	●
Easy battery and fuse exchange without opening the complete case	●	●	●
Selectable sleep mode preserves battery life	●	●	●

Specifications

(Check the Fluke web for detailed specifications)

Functions	Maximum	Max. resolution	175	177	179
Voltage DC	1000V	0.1mV	±(0.15%+2)	±(0.09%+2)	±(0.09%+2)
Voltage AC	1000V	0.1mV	±(1.0%+3)	±(1.0%+3)	±(1.0%+3)
Current DC	10A	0.01mA	±(1.0%+3)	±(1.0%+3)	±(1.0%+3)
Current AC	10A	0.01mA	±(1.5%+3)	±(1.5%+3)	±(1.5%+3)
Resistance	50MK	0.1K	±(0.9%+1)	±(0.9%+1)	±(0.9%+1)
Capacitance	10000µF	1nF	±(1.2%+2)	±(1.2%+2)	±(1.2%+2)
Frequency	100kHz	0.01Hz	±(0.1%+1)	±(0.1%+1)	±(0.1%+1)
Temperature	-40°C/+400°C	0.1°C			±(1.0%+10)

Accuracies are best accuracies for each function

Battery Life: Alkaline, 200 hrs typical
Size (HxWxD): 190 mm x 85 mm x 45 mm
Weight: 0.42 kg
Lifetime Warranty

Included Accessories

Test leads with 4 mm lantern tips and protective cap, installed 9V battery and users manual. The 179 also includes the 80BK temperature probe.

Ordering Information

Fluke 175	True RMS Multimeter
Fluke 177	True RMS Multimeter
Fluke 179	True RMS Multimeter
Fluke 179/EDA2 Kit	Electronics Combo Kit
Fluke 179/MAG2 Kit	Industrial Combo Kit

See page 12

Recommended Accessories


i400
See page 102


C90
See page 106


TLK-220
See page 100


SV225
See page 110


i410-i1010
See page 103

110 Series Digital Multimeters

FLUKE®

Fluke 117

Fluke 115

Fluke 114

Fluke 116

600V CAT III

On all inputs

LISTED

True RMS

Included Accessories

Test leads with 4 mm lantern tips and protective cap, Holster, installed 9V battery and users manual

Ordering Information

Fluke 114	True RMS Multimeter
Fluke 115	True RMS Multimeter
Fluke 116	True RMS Multimeter
Fluke 117	True RMS Multimeter
Fluke 117/322 Kit	Electricians Combo Kit

Compact design for ergonomic one-handed operation

The Fluke 110 Series comprises of four true-rms DMMs each designed for specific users, so one is sure to match your needs. The compact instruments offer convenient one-handed operation and feature a backlit display with large, easy-to-read digits.

Fluke 117 Electrician's Multimeter with Non-Contact Voltage

For electricians working in commercial and non-commercial premises (like hospitals and schools), the 117 is recommended. It includes extras like non-contact voltage detection to help get the job done faster and safer.

Fluke 116 Multimeter with temperature and microamps

The 116 is for heating, ventilation and air conditioning (HVAC) engineers. It includes temperature measurement and microamp current ranges to quickly troubleshoot HVAC problems.

Fluke 115 Multimeter for field service testing

An everyday multimeter for technicians, the 115 is optimized for electrical and electronic testing in field service, industrial, and applications where more than basic functionality (such as measurement of ac/dc current) simplifies working.

Fluke 114 Electrical Multimeter

The 114 is ideal for electrical troubleshooting and straightforward 'go/no-go' testing in residential/commercial electrical testing. It has all the basic functions plus a special feature to prevent false readings caused by ghost voltage.

Features

	114	115	116	117
True RMS readings	AC	AC	AC	AC
Counts	6000	6000	6000	6000
Backlight	●	●	●	●
Analog bargraph	●	●	●	●
AutoVolt: Automatic AC/DC voltage selection	●		●	●
VoltAlert™, Non-contact voltage detection				●
Built-in thermometer for HVAC applications			●	
LoZ: low input impedance to prevent ghost voltage	●		●	●
Min/Max/Average to record signal fluctuations	●	●	●	●
Resistance, continuity	●	●	●	●
Frequency, Capacitance, Diode test		●	●	●
Microamps to test flame sensors			●	
Display hold	●	●	●	●
Auto/manual ranging	●	●	●	●
Low battery indication	●	●	●	●
Compact case with removable holster	●	●	●	●

Specifications

(Check the Fluke web for detailed specifications)

Functions	Maximum	Max. resolution	114	115	116	117
Voltage DC	600V	1mV	±(0.5%+2)	±(0.5%+2)	±(0.5%+2)	±(0.5%+2)
Voltage AC	600V	1mV	±(1.0%+3)	±(1.0%+3)	±(1.0%+3)	±(1.0%+3)
Current DC	10.00A	1mA		±(1.0%+3)		±(1.0%+3)
Current AC	10.00A	0.01A		±(1.5%+3)		±(1.5%+3)
Resistance	40MK	0.1K	±(0.9%+1)	±(0.9%+1)	±(0.9%+1)	±(0.9%+1)
Capacitance	10000µF	1nF		±(1.9%+2)	±(1.9%+2)	±(1.9%+2)
Frequency	50kHz	0.01Hz		±(0.1%+2)	±(0.1%+2)	±(0.1%+2)
Temperature	-40°C/+400°C	0.1°C			±(1.0%+2)	

Accuracies are best accuracies for each function

Battery type: 9 volt Alkaline, 400 hours typical
Size (HxWxD): 167 mm x 84mm x 46 mm

Weight: 0.55 kg (including batteries)
Three Year Warranty

Recommended Accessories

C50
See page 106

TL223
See page 100

MC6
See page 110

TPAK
See page 109

77IV Digital Multimeter

Fluke 77IV

Lifetime Warranty!

CAT III 1000V
CAT IV 600V

On all inputs

LISTED UL CSA TÜV PRODUCT SERVICE GS

Versatile multimeter for field service or bench repair

The 77-IV digital multimeter has the features needed to repair most electrical and electronic problems. This meter is simple to use and has significant improvements over Fluke's original 70 Series with more measurement functions, conformance to the latest safety standards, and a much larger display that's easier to view.

Features

	77 IV
Digital display counts	6000
Large display with backlight	●
Min-Max-Average recording mode with Min/Max Alert	●
High contrast digital display with large digits	●
Analog bargraph/segments	31
Auto and Manual ranging	●
Automatic Touch Hold®	●
Audible continuity / diode test	●
Ergonomic case with integrated holster	●
Sleep Mode preserves battery life	●
EN 61010-1 safety rating	CAT IV 600V / CAT III 1000V

Specifications

Function	Maximum	Max. resolution	Accuracy
Voltage DC	1000V	1mV	±(0.3% + 1)
Voltage AC	1000V	1mV	±(2.0% + 2)
Current DC	10A	0.01mA	±(1.5% + 2)
Current AC	10A	0.01mA	±(2.5% + 2)
Resistance	50MK	0.1K	±(0.5% + 1)
Capacitance	9999µF	1nF	±(1.2% + 2)
Frequency	99.99kHz	0.01Hz	±(0.1% + 1)

Accuracies are best accuracies for each function.

Battery Life: 400 hours typical
Size (HxWxD): 185 mm x 90 mm x 43 mm
Weight: 0.42 kg
Lifetime Warranty

Included Accessories

TL75 test leads, operator's manual, 9V battery (installed)

Ordering Information

Fluke 77IV Multimeter

27 Sealed Digital Multimeter

Fluke 27

Lifetime Warranty!

1000V
CAT III

On all inputs

LISTED UL CSA DVE

Completely sealed to prevent entry of water and contaminants

A special extra rugged case with o-rings prevents water from entering the input jacks and switches. Use this meter in very harsh, wet or dusty locations. Meets MIL STD 28800 military specifications for vibration, shock, and water resistance.

- 3200 Digital Display/Counts
- 31 Analog Bar Graph/Segments
- Fast Auto and Manual Ranging
- Touch Hold®
- Rugged, O-Ring Sealed Case
- Separate, Sealed Battery/Fuse Door
- Operates from -15°C to +55° and 95% Relative Humidity
- Meets Military Shock, Vibration and Water Resistance Requirements
- Min/Max Relative Mode
- Audible Continuity/Diode Test
- Superior EMI Shielding

Specifications

Function	Range & Resolution	Best Accuracy
Voltage DC	320.0mV, 3.200V, 32.00V, 320.0V, 1000V	±(0.1% +1)
Voltage AC	320.0mV, 3.200V, 32.00V, 320.0V, 1000V	±(0.5% +3)
Current DC	320.0µA, 3.200 mA, 32.00 mA, 320.0 mA, 10A	±(0.75% +2)
Current AC	320.0µA, 3.200 mA, 32.00 mA, 320.0 mA, 10A	±(1.5% +2)
Resistance	320K, 3.200kK, 32.00kK, 320.0kK, 3.200MK, 32.00MK	±(0.2% +1)
Conductance	32.00ns	±(2% +10)

Range & Resolution: If selected range is 3.200V the resolution is 0.001V in that range
Battery Life: Typically over 1000 hours (alkaline)
Size (HxWxD): 203 mm x 95 mm x 56 mm
Weight: 0.75 kg
Lifetime Warranty

Included Accessories

TL75 right-angle test leads, two insulated AC72 alligator clips, spare fuse, 9 Volt battery and operator's manual.

Ordering Information

Fluke 27 Multimeter

88V Automotive Meter

Fluke 88V/A

Lifetime Warranty!

CAT III 1000V
CAT IV 600V

On all inputs

The right meter for auto-electric diagnosis

Perhaps the most important tool you'll use in troubleshooting auto electrical systems is the multimeter. Basic multimeters measure voltage, current and resistance, while automotive multimeters like the Fluke 88V have features that can check frequency, duty cycle, make diode tests, and measure temperature, pressure and vacuum.

Features

	88V/A
Continuity for detecting open and shorts	●
Frequency for "pulsed-DC" and AC tests	●
Duty cycle to verify operation of feedback carburetors	●
Diode test for alternator testing	●
Built-in thermometer; thermocouple probe included	●
Min/Max/Average recording with Min/Max Alert	●
Peak capture to record transients as fast as 250 µs	●
Relative mode to remove test lead resistance from low ohms measurements	●
Millisecond pulse width measurements for fuel injectors	●
AutoHOLD® to capture stable readings	●
Large display with bright, two-level backlight	●
Magnet hanger to attach meter to the vehicle	●
RPM80 Inductive Pickup for both conventional and distributorless (DIS) ignitions	●
Hard Meter Case	●
Safety rating	CAT III 1000V, CAT IV 600V

Specifications

	Fluke 88V		
	Range	Resolution	Accuracy
Voltage DC	1000V	0.1mV	0.1%
Voltage AC	1000V (5 kHz)	0.1mV	0.5%
Current DC	10A	0.1µA	0.4%
Current AC	10A	0.1µA	1.2%
Resistance	50MK	0.1K	0.4%
Capacitance	10mF	0.01nF	1%
Frequency	200kHz	0.01Hz	0.005%
Temperature	1090°C	0.1°C	1%

Battery Life: 88V – Over 400 hours typical (alkaline)
Size (HxWxD): 88V – 186 mm x 86 mm x 32 mm
Weight: 88V – 0.36 kg
Lifetime Warranty

Included Accessories

H80M Holster with TPAK Meter Hanging Solution, TL224 SureGrip Silicone Test Lead Set, TP220 SureGrip Test Probe Set, AC285 SureGrip Large Jaw Alligator Clip Set, 80BK Integrated Temperature Probe, RPM80 Inductive Pick-up Probe, C800 Hard Case, User's Manual + Quick Reference Guide

Ordering Information

Fluke 88V/A Automotive Meter Combo Kit

Recommended Accessories

TL82
See page 108

TLK-282
See page 108

90i-610s
See page 108

80PK-27 (requires 80AK)
See page 104

PV350
See page 108

8845A/8846A
6.5 Digit Precision Multimeters

FLUKE®

Fluke 8845A

Fluke 8846A

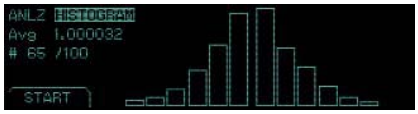
Precision and versatility for bench or systems applications

The Fluke 8845A and 8846A, 6.5 digit precision multimeters have the precision and versatility to handle your most demanding measurements on the bench or in a system.

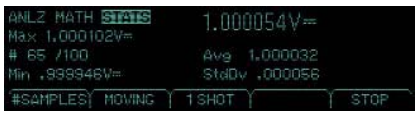
Dual Display offers versatile graphical capabilities: The 8845A and 8846A features a unique graphical display that can reveal signal quality issues like drift, intermittent and stability by viewing the measurement data as a real time TrendPlot™, Histogram or Statistics using the unique analyze mode.
Wide Measurement Ranges: Resistance or current has been extended to cover the widest range possible.

Perform 4-wire measurements easily with two leads: Patented split terminal jacks for 2x4 Ohms function allows you to perform precise 4-wire measurements with only two leads instead of four. Optional Kelvin leads accessories are available to enable you to establish a 4-wire connection even in tight spaces.
Systems Capabilities: Both instruments include an RS-232, IEEE-488 and Ethernet interface as standard, with popular DMM emulation modes makes systems integration a simple task.
Software: Transfer data points from your meter to your PC with the free copy of FlukeView Forms Basic. To customize your forms upgrade with FVF-UG.

Use the built-in TrendPlot paperless chart recorder to graphically identify the extent of drift and intermittent events in analog circuits



View results in Histogram mode to reveal stability or noise problems in analog circuits



Handle even the most demanding measurements with high accuracy and 6.5 digit resolution

LISTED UL CSA True RMS

Features

	8845A	8846A
Display	Dual VFD Dot Matrix	
Resolution	6.5 Digits	
Measurement Rate (Rdgs/s)	1000	
Continuity / Diode Test	Yes	
Analytical Functions	Statistics, Histogram, TrendPlot™, Limit Compare	
Math Functions	NULL, Min/Max, dB/dBm	
USB Device Port	–	USB Memory Drive port
Real Time Clock	–	Yes
Interfaces	RS232, IEEE-488.2, Ethernet	
Programming Languages/ Emulation Modes	SCPI (IEEE-488.2), Agilent 34401A, Fluke 45	
Safety	Designed to comply with IEC 61010-12000-1, ANSI / ISA-S82.01-1994, CAN / CSA-C22.2 No.1010.1-92 1000V CATI / 600V CATII	

Specifications

(Check the Fluke web for detailed specifications)

	8845A			8846A		
Function*	**Range**	**Resolution**	**Accuracy* (%)**	**Range**	**Resolution**	**Accuracy* (%)**
Voltage DC	1000 V	100 nV	0.0035	1000 V	100 nV	0.0024
Voltage AC (Freq 300 Hz)	750 V	100 nV	0.06	1000 V	100 nV	0.06
Resistance (2x4 Wire)	100 MK	100 µK	0.01	1 GK	10 µK	0.01
Current DC	10 A	100 pA	0.05	10 A	100 pA	0.05
Current AC (Freq. 3Hz-10kHz)	10 A	1 µA	0.10	10 A	10 nA	0.10
Freq/Period	300 kHz	1 µHz	0.01	1 MHz	1 µHz	0.01
Capacitance	-	-	-	1 nF to 0.1 F	1 pF	1
Temperature RTD	-	-	-	-200 to +600°	0.001°	0.06

* Accuracy =+/- (% of reading)

Size (HxWxD): 88 mm x 215 mm x 293 mm
Weight: 3.6 kg
One Year Warranty

Included Accessories

LCI Line Power Cord, TL71 Test Lead Set, Spare Line Power fuse, Programmers Manual/User Manual on CD-ROM, FVF-BASIC FlukeView Forms Software Basic Version.

Ordering Information

Fluke 8845A	6.5 Digit Precision Multimeter
Fluke 8845A/SU	6.5 Digit Precision Multimeter (software + cable)
Fluke 8846A	6.5 Digit Precision Multimeter
Fluke 8846A/SU	6.5 Digit Precision Multimeter (software + cable)

Calibration & Service agreements

Recommended Accessories

884X-case
Hard case

884X-short
4-wire short

TL2X4W-PT II
2x4 Wire Ohms Test lead 2mm Probe Tip

884X-512M
USB Memory 512M

FVF-UG
FlukeView Forms Software Upgrade

8808A 5.5 Digit Multimeter

FLUKE®

New

Fluke 8808A

The Fluke 8808A includes two low impedance low current ranges for measuring sensitive leakage currents

Use setup keys (S1–S6) for fast access to repetitive measurements. Setups can include limit compare mode with pass/fail indicators

Dual Display

LISTED UL CSA True RMS

Versatile multimeter for manufacturing, development and service applications

Manufacturing test, R&D, development and service applications demand performance and flexibility from a bench meter. The Fluke 8808A delivers a wide variety of measurement functions, including volts, ohms, and amps, plus frequency – all at superior accuracy and resolution with a basic V dc accuracy of 0.015 %.

Measure sensitive leakage current: The Fluke 8808A includes two low impedance low current ranges for measuring sensitive leakage currents (i-Leakage).

Perform routine manufacturing functional tests with consistency: Use setup keys (S1 – S6) for fast access to repetitive measurements. Operators no longer need to press multiple buttons to make routine measurements.

Eliminate production mistakes: The 8808A has a limit compare mode with built in display enunciators that clearly show whether a test is within or out of limits.

Perform 4-wire measurements with only two leads: Patented split terminal jacks for 2x4 Ohms function allow you to perform precise 4-wire low ohms measurements with only two leads instead of four. Optional test lead accessories are available to enable you to establish a 4-wire connection even in tight spaces or on surface mount devices.

Features

	8808A
Display	VFD multi segment
Resolution	5.5 digits
Measurements	V ac, V dc, I dc, I ac, K, Cont, Diode
Advanced Measurements	2X4 Wire Ohms, Freq, i-Leakage
Continuity / Diode Test	Yes
Analytical Functions	Limit Compare
Math Functions	dBm, dB, Min, Max
Interfaces	RS-232, USB via optional adapter
Programming Languages/Modes	Simplified ASCI, Fluke 45
Safety Rating	CAT I 1000 V, CAT II 600 V

Specifications

(Check the Fluke web for detailed specifications)

Functions	Range	Resolution	Accuracy*
Voltage DC	200 mV to 1000 V	1 µV	0.015
Voltage AC (Freq. 10 Hz to 100 kHz)	200 mV to 750 V	1 µV	0.2
Resistance (2x4 Wire)	200 K to 100 MK	1 MK	0.02
Current DC	200 µA to 10 A	1 nA	0.02
Current AC (Freq. 20 Hz to 2 kHz)	20 mA to 10A	100 nA	0.3
Freq. Period	20 Hz to 1 MHz (Freq. only)	0.1 mHz	0.01

* Accuracy = +/- (% of reading)

Size (HxWxD): 88 mm x 217 mm x 297 mm
Weight: 2.1 kg
One year Warranty

Included Accessories

LCI Line Power Cord, TL71 Test Lead Set, Spare Line Power fuse, Programmers Manual/User Manual on CD-ROM, FVF-BASIC FlukeView Forms Software Basic Version

Ordering Information

Fluke 8808A	5.5 digit multimeter
Fluke 8808A/SU	5.5 digit multimeter, (software & cable)
Fluke 8808A/TL	5.5 digit multimeter, 2X4W Test Lead Kit

Recommended Accessories

TL2X4W-PT II
2x4 Wire Ohms Test lead 2mm Probe Tip

884X-SHORT
4-Wire Short

FVF-UG
FlukeView Forms Software Upgrade

Clamp Meters and Electrical Testers

The ergonomic clamp meters feature wide opening jaws for safe, fast non-contact current measurement. The Fluke leakage clamp meter is ideal for non-invasive checks of insulation resistance. The range of electrical testers includes two-pole testers for taking quick measurements in tight spaces, phase rotation indicators to take the guess work out of checking phase/motor rotation, a multipurpose cable locator and handy voltage alerts.

330 Series/902 Clamp Meters

FLUKE®

Fluke 337

Fluke 336

Fluke 335

Fluke 334

Fluke 333

Fluke 902

600V CAT III

LISTED UL CSA TÜV PRODUCT SERVICE GS True RMS

Expanded capabilities for current measurement

The Fluke 330 Series Clamp Meters offer all the features you need to fit the way you work. The small body and jaws fit perfectly in your hand and into tight places. Meter controls are positioned so that current measurements can be down with one hand. A large backlit display (on most models) is easy to see and a handy Display Hold keeps measurements on the display. Measuring starting current for motors, lighting, etc. is easy with the in-rush current function (on most models). The Fluke 902 adds temperature and capacitance measurement capabilities to the line, ideal for heating, ventilation and air conditioning system inspections.

Features

Functions	333	334	335	336	337	902
True-RMS			●	●	●	●
Display backlight		●	●	●	●	●
Auto shut-off	●	●	●	●	●	●
Display Hold	●	●	●	●	●	●
Motor start-up current		●	●	●	●	
Low battery indication	●	●	●	●	●	●
Large jaw				●	●	
Min/Max					●	●
Current AC/DC				●	●	●*
Temperature						●

* DC A: 0-200 µA direct measurement

Specifications

Functions	Range	333	334	335	336	337	902
Current AC	0-400.0A	2% ± 5 counts					
	0-600.0A		2% ± 5 counts	2% ± 5 counts	2% ± 5 counts		1% ± 5 counts
	0-999.9A					2% ± 5 counts	
Crest Factor	0-600.0A			2.4 @ 500A	3 @ 500A		2.4 @ 500A
				2.0 @ 600A	2.5 @ 600A		2.0 @ 600A
	0-999.9A					3 @ 500A	
						2.5 @ 600A	
						1.42@ 1000A	
Current DC	0-200 µA						1% ± 5 counts
	0-600.0A				2% ± 5 counts		
	0-999.9A					2% ± 5 counts	
In-rush Current	Integration time		100mS	100mS	100mS	100mS	
Voltage AC	0-600.0V	1% ± 5 counts	1% ± 5 counts	1% ± 5 counts	1% ± 5 counts	1% ± 5 counts	1% ± 5 counts
Voltage DC	0-600.0V	1% ± 5 counts	1% ± 5 counts	1% ± 5 counts	1% ± 5 counts	1% ± 5 counts	1% ± 5 counts
Resistance	0-600.0Ω	1.5% ± 5 counts	1.5% ± 5 counts	1.5% ± 5 counts	1.5% ± 5 counts	1.5% ± 5 counts	
	0-6000Ω		1.5% ± 5 counts	1.5% ± 5 counts	1.5% ± 5 counts	1.5% ± 5 counts	
	0-9999Ω						1.5% ± 5 counts
Continuity		≤ 30Ω	≤ 30Ω	≤ 30Ω	≤ 30Ω	≤ 30Ω	≤ 30Ω
Frequency	5-400Hz					0.5% ± 5 counts	0.5% ± 5 counts
Temperature	-10° to 400°C						1% ± 0.8°C
Capacitance	1µF to 1000µF						1.9% ± 2 counts

Battery Life: Alkaline, 150 hours
Size (HxWxD):
238 mm x 79 mm x 41mm (333, 334, 335 and 902)
251 mm x 79 mm x 41 mm (336 and 337)

Jaw Opening: 30 mm (333, 334, 335 and 902)
42 mm (336, 337)
Weight: 0.312 kg
Three Year Warranty

Included Accessories

C33 Soft case, TL75 test leads, 80BK Integrated DMM temperature probe (902), 2 AA alkaline batteries, instruction card and safety information sheet.

Ordering Information

Fluke 333	Clamp Meter
Fluke 334	Clamp Meter
Fluke 335	True-RMS Clamp Meter
Fluke 336	True-RMS Clamp Meter
Fluke 337	True-RMS Clamp Meter
Fluke 902	True-RMS Clamp Meter (HVAC)

Recommended Accessories


H3
See page 107


TL223
See page 100


L215
See page 101

320 Series Clamp Meters

Fluke 322

Fluke 321

Big features, small package

The Fluke 321 and 322 are designed to verify the presence of load current, ac voltage and continuity of circuits, switches, fuses and contacts. These small and rugged clamp meters are ideally suited for current measurements up to 400 A in tight cable compartments.

Model 322 also offers DC voltage measurements and has a higher resolution for loads below 40 A.

Features

Functions	321	322
Compact design	●	●
Auto shut-off	●	●
Display Hold	●	●
Low battery indication	●	●
Current AC	●	●
Volts DC		●

Specifications

	321		322		321	322
Functions	Range	Resolution	Range	Resolution	Best Accuracy	
Current AC	400.0A	0.1A	40.00A 400.0A	0.01A 0.1A	1.8% ± 5 counts (50 - 60Hz) 3.0% ± 5 counts (60Hz – 400Hz)	1.8% ± 5 counts (50 - 60Hz) 3.0% ± 5 counts (60Hz – 400Hz)
Voltage AC	0-400.0V 400-600V	0.1V 1V	0- 400.0V 400 – 600V	0.1V 1V	1.2% ± 5 counts (50 - 400Hz)	1.2% ± 5 counts (50 - 400Hz)
Voltage DC			0 - 400.0V 400 – 600V	0.1V 1V		1% ± 5 counts
Resistance	0 – 400.0Ω	0.1Ω	0 – 400.0Ω	0.1Ω	1% ± 5 counts	1% ± 5 counts
Continuity	≤ 30Ω		≤ 30Ω			

Battery Life: 100 hours typical (2 AAA carbon zinc)
Size (HxWxD): 190 mm x 63 mm x 35 mm
Jaw Opening: 25 mm

Weight: 0.23 kg
Two Year Warranty

Included Accessories

C23 Soft carrying case, TL75 test leads, (2) AA alkaline batteries, coated instruction card, safety information sheet.

Ordering Information

Fluke 321	Clamp Meter
Fluke 322	Clamp Meter
Fluke 117/322 Kit	Electricians Combo Kit

Combo Kit

Fluke 117/322 Kit
See page 12

Recommended Accessories

H3
See page 107

TL223
See page 100

L215
See page 101

350 Series AC/DC Clamp Meters

FLUKE®

Fluke 353

New

Fluke 355

True-RMS, 2000 A Clamp Meters for industrial and utility applications

Confidently take reliable readings with the true-rms, Fluke 353/355 Clamp Meters; the tools of choice for high current measurement up to 2000 A. The extra-wide jaw easily clamps around large conductors, typically found in high current applications. The rugged design and CAT IV 600 V, CAT III 1000 V ratings add an extra element of protection when taking high-powered measurements.

Accurate peak measurements can be taken using the in-rush current mode - ideal for motors and inductive loads. The 355 also measures voltage and resistance, making this the most versatile tool for utilities, electrical contractors and industrial service technicians.

Features

	353	355
True-RMS measurements	●	●
Display backlight	●	●
Motor start-up current	●	●
Min/Max/Average	●	●
Voltage AC/DC		●
Resistance measurement		●
Continuity measurement with beeper		●

Specifications

(Check the Fluke web for detailed specifications)

Functions	Range	353	355
Current AC/DC	0-40.00 A	1.5% ± 15 counts	1.5% ± 15 counts
	0-400.0 A	1.5% ± 5 counts	1.5% ± 5 counts
	0-2000 A; 1400 AC rms		
Crest Factor		2.4	2.4
Voltage AC/DC	0-4.000 V		1% ± 10 counts
	0-40.00 V		1% ± 5 counts
	0-400.0 V		
	0-600 V AC rms		
	0-1000 V DC		
Resistance	0-400.0 Ω		1.5% ± 5 counts
	0-4.000 kΩ		
	0-40.00 kΩ		
	0-400.0 kΩ		
Continuity beeper	Appr. ≤ 30 Ω		
Frequency	5.0Hz to 100.0Hz		0.2% ± 2 counts
	100.1Hz to 999Hz		0.5% ± 5 counts

Power Supply: 6 x 1.5V AA NEDA 15A or IEC LR6
Battery Life: 100 hours (with typical usage, backlight off)

Size (HxWxD): 300 mm x 98 mm x 52 mm
Jaw opening: 58 mm
Weight: 0.814 kg
Two year warranty

600V CAT IV

1000V CAT III

LISTED UL · CSA · TÜV PRODUCT SERVICE · GS · True RMS

Included Accessories

Fluke 353: C43 Soft Meter Case, 6 AA batteries, users manual
Fluke 355: C43 Soft Meter Case, 6 AA batteries, TL224 SureGrip® Silicone Test Lead Set, TP2 Slim Reach Test Probe Set (2 mm), AC285 SureGrip® Alligator Clip Set, users manual

Ordering information

Fluke 353 AC/DC Clamp Meter
Fluke 355 AC/DC Clamp Meter

Recommended Accessories

TL223 (Fluke 355)
See page 100

L215 (Fluke 355)
See page 101

360 Leakage Clamp Meter

FLUKE®

Fluke 360

Leakage current measurements with a tough, pocket sized clamp meter

The Fluke 360 is ideal for non-invasive checks of insulation resistance.
The unique jaw design eliminates the influence of adjacent current conductors.
The ergonomic design of the Fluke 360 ensures easy measuring. The measuring clamp fits into tight spaces and the wide display angle clearly shows the measurement result. The data hold button keeps the measured value on the display after removing the clamp for the measured conductor.

The light Fluke 360 offers the widest range of current measurement for maintenance professionals and contractors.

Features

- Measurement of leakage protectives conductor and touch current with a resolution of 1µA
- Advanced shielding to ensure accurate results when measuring near other conductors
- Automatic ranging within the manually selected mA or A range
- Easily viewed measurements on digital and bargraph display and HOLD when measuring in hard to see locations
- Broad range of measurements currents up to 60 A for all installation needs
- Easy carrying, pocket sized clamp with wide 40 mm jaw size
- Display-Hold for convenience in use
- Auto power off with audible warning buzzer
- Conformance to IEC61010 and EMC standard
- Meets all the applications and performance classes in safety standard VDE0404-4 and the new VDE0702

Specifications

(Check the Fluke web for detailed specifications)

Functions	Range	Resolution	Accuracy
Current AC	3mA 30mA	0.001mA 0.01mA	1% ± 5 counts
	30A 60A	0.01A 0.1A	1% ± 5 counts (0~50A) 5% ± 5 counts (50~60A)
Frequency	50 and 60Hz		

Battery type: 3 Volt Lithium, 90 hours typical
Size (HxWxD): 176 mm x 70mm x 25 mm
Weight: 0.2kg
One Year warranty

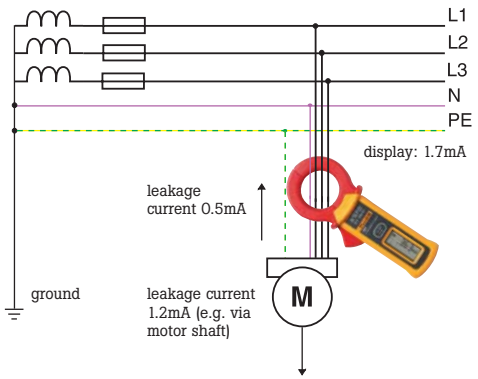
300V CAT III

Included accessories

Soft carrying pouch and users manual

Ordering information

Fluke 360 Leakage Clamp Meter



T100 Series/T50
Voltage and Continuity Testers

FLUKE®

Fluke T140


Fluke T120


Fluke T100


Fluke T50

600V CAT IV

600V CAT III

The fast and easy solution to voltage, continuity and phase rotation testing

Fluke T50

Offers a low cost solution to voltage-continuity measurement. It contains an acoustic and optic continuity test and features a single pole test for phase detection.

Fluke T100 Series

The fast and easy solution to voltage, continuity and resistance measurements. Ideal for site conditions, the 3 models of the T100 Series 2-pole testers have a rugged construction and ergonomically formed housing for perfect handling. All models offer a patented three-phase rotation detection system providing quick phase rotation indication.
Moreover they have a special electrical torch function for working in low light level environments and have an ingress protection rating of IP65. The T100 Series are compliant with EN 61010-1 and EN61243-3 requirements.

Features

	T50	T100	T120	T140
Display			LCD	LCD
LED Bargraph	10 LED's	12 LED's	12 LED's	12 LED's
Backlight				●
Resistance measurement				●
Voltage test	●	●	●	●
Optical and acoustical continuity test	●	●	●	●
Rotary field indication		●	●	●
Single pole test for phase detection	●	●	●	●
Indication of polarity	●	●	●	●
Electrical torch function		●	●	●
Probe tip protection		●	●	●
The voltage display also functions when using discharged - or no batteries	●	●	●	●

Specifications

	T50	T100	T120	T140
Voltage AC/DC	12 – 690V	12 – 690V	12 – 690V	12 – 690V
Continuity	0 – 200kΩ	0 – 400kΩ	0 – 400kΩ	0 – 400kΩ
Frequency	0 – 65Hz	0 – 400Hz	0 – 400Hz	0 – 400Hz
Phase Rotation	-	100 to 690V	100 to 690V	100 to 690V
Resistance measurement	-	-	-	Up to 1999Ω
Response time	< 0.1s	< 0.1s	< 0.1s	< 0.1s

Size T50 (HxWxD): 210 mm x 40 mm x 22 mm
Size T100/T120/T140 (HxWxD):
240 mm x 56 mm x 24 mm
Case: T100/T120/T140: IP65
(water-jet and dust tight protection)
T50: IP54

Weight T50: 130 g
Weight T100/T120/T140: 180 g
Two year warranty

Included Accessories

Two 1.5V batteries and instruction sheet

Ordering Information

Fluke T50 Voltage/Continuity Tester
Fluke T100 Voltage/Continuity Tester
Fluke T120 Voltage/Continuity Tester
Fluke T140 Voltage/Continuity Tester

UK versions are compliant with GS38

Recommended Accessories


C23 (T50)
See page 106


C33 (T100 Series)
See page 106

T5 Electrical Testers

Fluke T5-1000

Fluke T5-600

CAT III 1000V
CAT IV 600V

600V
CAT III

LISTED

Fluke T5-H5-1AC Kit

Included Accessories

TP4 4 mm detachable probes (detachable GS38 probes for the UK) and instruction sheet

Ordering Information

Fluke T5-600	Electrical Tester
Fluke T5-1000	Electrical Tester
Fluke T5-H5-1AC Kit	Electrical Tester with holster and IAC

The fast and easy solution to basic electrical testing

The Fluke T5 testers let you check voltage, continuity and current with one compact tool. Select volts, ohms or current and the instrument does the rest. Model T5-600 measures 600 volts AC/DC, model T5-1000 is designed for 1000 volts. OpenJaw™ current technology lets you check current up to 100 A, without breaking the circuit. The optional H5 holster keeps the test probes and leads ready to test and lets you clip the T5 onto your belt.

Features and Specifications

	T5-600	T5-1000
Display Count	1000	1000
Automatic Selection	●	●
Continuity and Bleeper	●	●
Sleep Mode	●	●
AC Voltage	600V	1000V
DC Voltage	600V	1000V
AC Current	100A	100A
Resistance	1000Ω	1000Ω
Safety range	600V CAT III	1000V CAT III / 600V CAT IV

Battery life: 400 hours
Size (HxWxD):
203 mm x 51 mm x 30.5 mm

Weight: 0.38 kg
Two year warranty

Fluke T5-H5-1AC Kit

The ideal kit for busy electrical contractors and electricians. The benefits of a DMM, clamp meter and non-contact voltage detector all in one kit. A holster for the T5 is also included.

Kit includes:
- Fluke T5
- H5 holster
- Free Fluke IAC-II

Recommended Accessories

H5
See page 107

ACC-T5-Kit
See page 101

AC285
See page 101

1AC II Volt Alert
LVD1/LVD2 Volt Lights
SM100/200/300 SocketMaster Testers

Fluke 1AC II

Fluke 1AC II VoltAlert™

The Fluke VoltAlert AC voltage detector is very easy to use – just touch the tip to a terminal strip, outlet or cord. When the tip glows red and the unit beeps, you know there is voltage on the line.

- It continually tests its battery and its circuit integrity with a periodic double flash visual indication.
- Highest safety rating: CAT IV 1000V
- Detects voltage without metallic contact

Operating range: 200 – 1000V AC
Batteries: Two AAA Alkaline
Size (H): 148 mm
Two Year Warranty

Fluke 1AC II VoltAlert™ 5-pack

- Buy 4 get 1 FREE

LVD1

LVD1 Volt Light

Dual sensitivity voltage detector

- Detects voltage from 40V to 300V AC
- Blue light means you're close
- Red light means you're at the source
- Comes with a versatile clip to secure light to pocket, hat or even panel door

LVD2

1000V CAT IV

LVD2 Volt Light

Combines bright light and voltage detection in one pen style design

- Dual sensitivity
- Detects voltage from 90V to 600V AC
- Blue light means you're close
- Red light means you're at the source
- Rated to CAT IV 600V

SM100/200/300 SocketMaster Testers

The fast way to check if your sockets are safe.

SM100

SM200

SM300

Only available with UK plug

Features

	SM100	SM200	SM300
Clear indication of wiring status	●	●	●
Audible notification of wiring status		●	●
Unique soft-touch RCD test checks 30 mA RCD's for trip within 300 ms			●
Earth Volts Touchpad detects raised earth voltages >50 V, indicating potentially dangerous situations			●

Ordering Information

Fluke 1AC II	VoltAlert
Fluke 1AC II 5PK	VoltAlert (5-pack)
LVD1	Volt Light
LVD2	Volt Light
SM100	SocketMaster Tester
SM200	SocketMaster Tester
SM300	SocketMaster Tester

9040/9062
Phase Rotation Indicators

FLUKE®

Fluke 9040

Fluke 9062

Take the guess work out of phase/motor rotation measurements

Fluke 9040

The Fluke 9040 is effective for measuring phase rotation in all areas where three-phase supplies are used to feed motors, drives and electrical systems. The Fluke 9040 is a rotary field indicator and can provide clear indication of the 3 phase via an LCD display and the phase rotation direction to determine correct connections. It allows rapid determination of phase sequence and has a voltage (up to 700V) and frequency range suitable for commercial and industrial applications. Test probes supplied with the instrument have a variable clamping range for safe contact, especially in industrial sockets.

Fluke 9062

The unique Fluke 9062 provides rotary field and motor rotation indication with the benefits of contact-less detection. Purpose made for commercial and industrial environments, the Fluke 9062 provides rapid indication of 3 phase rotation using test leads supplied or can be used to determine motor rotation on synchronous and asynchronous 3 phase motors. The contact-less detection is ideal for use on motors where the shaft is not visible. Test probes supplied with the instrument have a variable clamping range for safe contact, especially in industrial sockets.

Features

	9040	9062
3 phase indication	Via LCD	Via LED
Indication of phase rotation	●	●
Indication of motor rotation direction		●
Contact free determination of the rotation direction of running motors		●
Clear LCD display	●	
No battery required	●	

Specifications

	9040	9062
Voltage range	40-700V	Up to 400V
Phase Display	-	120-400V AC
Frequency range	15-400Hz	2-400Hz
Operating time	Continuous	Continuous

Size (HxWxD) Fluke 9040:
124 mm x 61 mm x 27 mm
Size (HxWxD) Fluke 9062:
124 mm x 61 mm x 27 mm

Power supply 9040: from unit under test
Power supply 9062: 1 x 9V
Weight 9040: 0.20 kg
Weight 9062: 0.15 kg
Two Year Warranty

9040:

9062:

Included Accessories

Fluke 9040: Alligator clips - black (3)
Flexible test probes - black (3)
Fluke 9062: Alligator clips - black (3)
Flexible test probes - black (3)
Test leads - black (3)

Ordering Information

Fluke 9040	Phase Rotation Indicator
Fluke 9062	Motor and Phase Rotation Indicator

Fluke 9062 Applications

Determine the presence of phase sequence of multiphase electrical supplies.

Determine the rotation of running motors simply by placing the instrument on the motor casing.

Check the correct rotation of motors prior to connection.

Recommended Accessories

TLK290
See page 101

TLK291
See page 101

C25
See page 106

2042 Cable Locator

FLUKE®

Transmitter

Receiver

Fluke 2042

The multipurpose solution to cable location

The Fluke 2042 is a professional general purpose cable locator. It is ideal for tracing cables in walls and underground, locating fuses/breakers on final circuits and locating interruptions and short-circuits in cables and electrical floor heating systems.
It can also be used for tracing metallic water and heating pipes. The unit is supplied as a complete kit comprising of a transmitter and receiver in a purpose-made carry case. The receiver also incorporates a torch function for working in dimly lit locations.

- For all applications (live or dead cables) without additional instruments
- Set includes a transmitter and a receiver
- Proven digitally coded sender signal guarantees clear signal identification
- Transmitter with LCD-display for transmitting level, transmitting code and external voltage
- Receiver with a backlight LCD-display for level of receiving signal, code of receiving signal and live voltage indication
- Automatic or manual adjustment of receiving signal sensitivity
- Switchable acoustic receiving signal
- Auto-Power-Off
- Additional torch lamp function for working in dark environments
- Additional transmitters are available for extension or to distinguish between several signals.

300V CAT III

Specifications

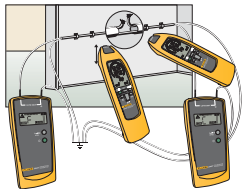
	Transmitter	Receiver
Voltage Measurement Range	12V, 50V, 120V, 230V, 400V	
Frequency Range	0..60Hz	
Output signal	125 kHz	
Voltage	Up to 400V AC/DC	
Tracing depth cable location		0…2.5m wall/underground cables
Main voltage detection		0…0.4m

Batteries Transmitter: 6 pc Batteries 1.5V
Batteries Receiver: 1 pc Battery 9V
Size (HxWxD) Transmitter:
190 mm x 85 mm x 50 mm
Size (HxWxD) Receiver:
250 mm x 65 mm x 45mm
Weight Locator: 0.45 kg
Weight Receiver: 0.36 kg
Two Year Warranty

Fluke 2042 applications

Location of fuses/breakers and assignment to circuits

Tracing of underground cables (max. depth 2.5 m)



Precise location of cable interruptions with additional transmitter

Included Accessories

TL27 Heavy Duty Test Lead Set (2)
TP74 Lantern Tip Test Probe Set
AC285 Alligator Clip Set
Soft carrying case
Hard case

Ordering Information

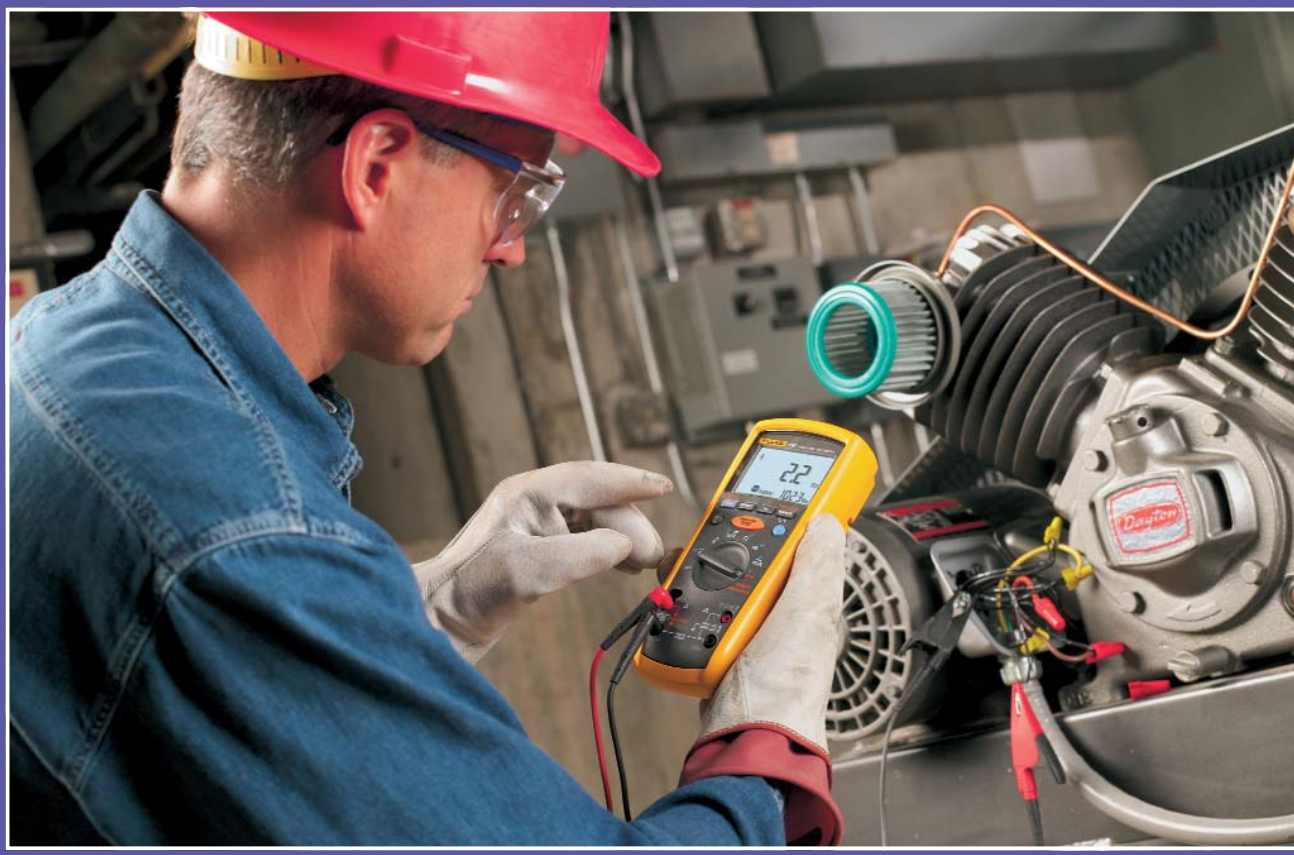
Fluke 2042	Cable Locator (transmitter + receiver)
Fluke 2042T	Cable Locator Transmitter

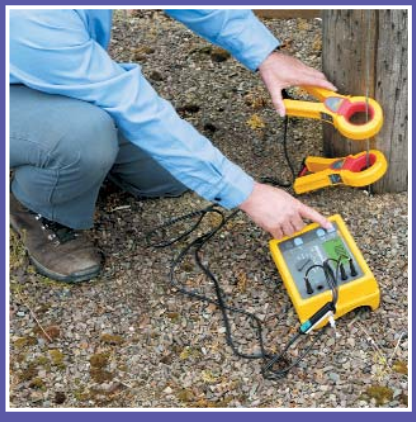
Recommended Accessories

Fluke 2042T

Insulation Testers and Earth Ground Testers

With a 5000 V MegOhmMeter for industrial-strength insulation testing and a range of compact hand-held instruments, we offer a solution for every troubleshooting and preventive maintenance application. Two of the digital hand-held insulation testers also include full-featured multimeters.
The Fluke Earth Ground Testers can perform all four types of earth ground measurement, including stakeless testing with earth ground loop resistances using only clamps.





Insulation Tester Selection Guide

FLUKE®

	1577	1587	1587T	1503	1507	1550B
Installation Test Functionality						
Test Voltages	500V, 1000V	50V, 100V, 250V, 500V, 1000V	50V, 100V	500V, 1000V	50V, 100V, 250V, 500V, 1000V	250V, 500V, 1000V, 2500V, 5000V
Insulation Resistance Test Range	0.1MK – 600MK	0.01 MK – 2GK	0.01MK – 100MK	0.1MK – 2GK	0.01MK – 10GK	200KK – 1TK
Polarization Index/Dielectric Absorption Ratio					●	●
Auto Discharge	●	●	●	●	●	●
Time Ramp test (Breakdown)						●
Pass/Fail Comparison					●	
Estimated Number of Insulation resistance Tests	1000	1000	1000	1000	1000	
Voltage > 30V Warning	●	●	●	●	●	●
Memory						(99 locations)
Remote Test Probe	●	●	●	●	●	
Lo Ohms				●	●	
Display	Digital LCD	Digital LCD	Digital LCD	Digital LCD	Digital LCD	Digital LCD/ Analog Bar Graph
Continuity	●	●	●	(200mA)	(200mA)	
Multimeter Functionality						
AC/DC Volts	●	●	●	●	●	
Current	●	●	●			
Resistance	●	●	●	●	●	
Temperature (contact)		●	●			
Lo-Pass Filter		●	●			
Capacitance		●	●			●
Diode Test		●	●			
Frequency		●	●			
MIN/MAX		●	●			
Other						
Hold/Lock	●	●	●	●	●	●
Backlight	●	●	●	●	●	
Software						(Fluke View® Forms Basic)
Warranty (in years)	3	3	3	1	1	2
Battery	4 AA (NEDA 15A or IEC LR6)	4 AA (NEDA 15A or IEC LR6)	4 AA (NEDA 15A or IEC LR6)	4 AA (NEDA 15A or IEC LR6)	4 AA (NEDA 15A or IEC LR6)	Rechargable

Fluke 1587/ET

Fluke 1587/MDT

Buy a Fluke 1587 Combo Kit and save

Fluke 1587/ET Advanced Electrical Troubleshooting Kit

This kit contains:
- Fluke 1587 Insulation Multimeter
- Fluke 62 Mini Infrared Thermometer
- i400 Current Clamp

Perform insulation tests with the Fluke 1587 plus a wide-range of DMM tasks with confidence and ease. Use the i400 with your Fluke 1587 to accurately measure AC current without breaking the circuit. Check for hot spots and measure temperature with the Fluke 62 Mini non-contact thermometer.

Fluke 1587/MDT Advanced Motor & Drive Troubleshooting Kit

This kit contains:
- Fluke 1587 Insulation Multimeter
- Fluke 9040 Phase Rotation Indicator
- i400 Current Clamp

Perform insulation tests with the Fluke 1587 plus a wide-range of DMM tasks with confidence and ease. Use the i400 with your Fluke 1587 to accurately measure AC current without breaking the circuit. Check the phase-rotation of three-phase motors easily and safely with the Fluke 9040.

1577/1587 Insulation Multimeters

FLUKE®

Fluke 1577

Fluke 1587
Fluke 1587T

Two powerful tools in one

The Fluke 1587 and 1577 Insulation Multimeters combine a digital insulation tester with a full-featured True RMS digital multimeter in a single compact, handheld unit, which provides maximum versatility for both troubleshooting and preventive maintenance.

Whether you work on motors, generators, cables, or switch-gear, the Fluke 1587/1577 Insulation Multimeters are ideally suited to help you with your tasks.

The Fluke 1587T is specially designed for the telecom environment.

Features

Multimeter Features	1577	1587	1587T
True RMS Voltage and Current for accurate measurements	●	●	●
Digital display counts	6000	6000	6000
Autorange and manual range for easy testing.	●	●	●
Selectable filter for accurate voltage and frequency measurements on motor drives		●	●
Min Max Recording, Diode test, temperature, capacitance & frequency measurement for maximum flexibility.		●	●
Insulation features			
User selectable test voltages for many applications	●	●	
Additional test voltages 50V, 100V, 250V		●	
Special remote control probe for easy and safe measurements	●	●	●
Auto-discharge of capacitive voltage for added user protection	●	●	●
Live circuit detection prevents insulation test if voltage > 30V is detected for added user protection	●	●	●
General features			
Auto Power off to save batteries	●	●	●
Large display with backlight	●	●	●
Input Alert to warn for incorrect connections	●	●	●
Continuity	●	●	●

CAT III 1000V
CAT IV 600V

Insulation Specifications

Functions	1577	1587	1587T
Measurement range	0.1MK to 600MK	0.01MK to 2GK	0.01MK to 100MK
Test voltages	500V, 1000V	50V, 100V, 250V, 500V, 1000V	50V, 100V
Test voltage accuracy	+ 20%, - 0%	+ 20%, - 0%	+ 20%, - 0%
Insulation test current	1 mA nominal	1 mA nominal	1 mA nominal
Auto discharge	Discharge time < 0.5s for C = 1µF or less	Discharge time < 0.5s for C =1µF or less	Discharge time < 0.5s for C =1µF or less
Maximum capacitive load	Up to 1µF load	Up to 1µF load	Up to 1µF load

Multimeter Specifications

Functions	Maximum	Max. resolution	1577	1587/1587T
Voltage DC	1000V	1 mV	± (0.2% + 2)	± (0.09% + 2)
Voltage AC	1000V	0.1mV	± (2% + 3)	± (2% + 3)
Current DC	400mA	0.01mA	± (1.0% + 2)	± (0.2% + 2)
Current AC	400mA	0.01mA	± (2% + 2)	± (1.5% + 2)
Resistance	50.0MK	0.1K	± (1.2% + 2)	± (0.9% + 2)
Capacitance	9999µF	1 nF	-	± (1.2% + 2)
Frequency	99.99kHz	0.01 Hz	-	± (0.1% + 1)
Temperature	-40°C to +537°C	0.1°C	-	± (1% + 10)

Battery life: Meter: 1000 hrs,
Insulation Test: >1000 tests

Size (HxWxD):
203 mm x 100 mm x 50 mm

Weight: 0.55 kg
Three Year Warranty

Included Accessories

C101 Rugged, utility hard case
TL224 SureGrip Silicone Test Lead Set
AC285 SureGrip Alligator Clip Set
80BK Integrated DMM Temperature Probe (Type K)
TP165X Remote Test Probe

Ordering Information

Fluke 1577	Insulation Multimeter
Fluke 1587	Insulation Multimeter
Fluke 1587T	Insulation Multimeter (for Telecom)

Recommended Accessories

C25
See page 106

i400
See page 102

TPAK
See page 109

L215
See page 101

TL238
See page 100

1503/1507 Insulation Testers

Fluke 1503

Fluke 1507

Truly portable insulation resistance testers

When you need a low cost solution to general purpose insulation testing look no further than the new Fluke insulation tester range. The Fluke 1507 and 1503 Insulation Testers are compact, rugged, reliable and easy to use.

The multiple test voltages on both models make them ideal for many troubleshooting, commissioning and preventive maintenance applications. Additional features like the remote probe save both time and money when performing tests.

Features

	1503	1507
User selectable test voltages for many applications	●	●
Additional test voltages 50V, 100V, 250V		●
Special remote control probe for easy and safe measurements	●	●
Auto-discharge of capacitive voltage for added user protection	●	●
Live circuit detection prevents insulation test if voltage > 30 V is detected for added user protection	●	●
Save both time and money with Automatic calculation of Polarization Index and Dielectric Absorption Ratio		●
Auto Power off to save batteries	●	●
Large display with backlight	●	●
Continuity function (200 mA)	●	●
Compare function (pass/fail) for fast repetitive tests		●

Specifications

Insulation specifications	1503	1507
Insulation test range	0.1 MK to 2 GK	0.01 MK to 10 GK
Test voltages	500 V, 1000 V	50 V, 100 V, 250 V, 500 V, 1000 V
Test voltage accuracy	+ 20 %, - 0 %	+ 20 %, - 0 %
Insulation test current	1mA nominal	1mA nominal
AC/DC Voltage measurement	600 V (0.1 V resolution)	600 V (0.1 V resolution)
Resistance measurement range	0.01 K to 20 kK	0.01 K to 20 kK
Auto discharge	Discharge time < 0.5 second for C = 1 µF or less	Discharge time < 0.5 second for C = 1 µF or less
Maximum capacitive load	Up to 1 µF	Up to 1 µF
Open circuit test voltage	> 4 V , < 8 V	> 4 V , < 8 V
Short circuit current	> 200 mA	> 200 mA

600V CAT IV

Battery life: Insulation Test: > 1000 tests
Size (HxWxD):
203 mm x 100 mm x 50 mm

Weight: 0.55 kg
One Year Warranty

Included Accessories

TP165x Remote Test Probe
TL224 SureGrip Silicone Test Lead Set
TP74 Lantern Tip Test Probe Set
Alligator clips

Ordering Information

Fluke 1503 Insulation Tester
Fluke 1507 Insulation Tester

Fluke 1503/1507 Applications

Insulation test at a distribution panel

Wiring test in a small distribution box – all in one spot

Recommended Accessories

C101
See page 107

TPAK
See page 109

TLK 225
See page 100

AC285
See page 101

L210
See page 110

1550B MegOhmMeter

FLUKE®

Fluke 1550B

Digital insulation testing up to 5000 Volts

The Fluke 1550B is a digital insulation tester capable of testing switchgear, motors, generators and cables at up to 5000 V DC. It can be used for a wide range of tests: from simple spot checks to timed tests and breakdown tests. Measurement storage and PC interface software make it ideal for preventive maintenance.

- Test voltages of 250 V, 500 V, 1000 V, 2500 V, 5000 V
- Capable of testing in 50 V increments between 250 V and 1000 V and 100 V increments between 1000 V and 5000 V
- Measures 0 to 1 Tera-Ohm
- Warning voltage function alerts the user that line voltage is present and gives the voltage reading up to 600V AC or DC
- Guard system eliminates the effect of surface leakage current on high-resistance measurements
- Large digital/analog LCD shows detailed measurement data
- Cable or insulation capacitance
- Leakage current
- Ramp function (0-5000 V DC) for breakdown testing
- Timer 1 to 99 minutes
- Polarization index and dielectric absorption calculated automatically
- 99 memory locations store all measurements parameters
- Includes Quicklink 1550B Software and Optical Interface cable

600V CAT III

LISTED UL SP TÜV PRODUCT SERVICE GS VDE

Included Accessories

Test leads, 5000 V-rated probes, Alligator clips, Interface cable
Flukeview Forms Basic, soft carrying case with water-proof bottom, instruction manual

Ordering Information

Fluke 1550B MegOhmMeter

Specifications

Test Voltage (DC)	Range	Accuracy (+/- reading)
250V	200kK to 5GK	5%
	5GK to 50GK	20%
500V	200kK to 10GK	5%
	10GK to 100GK	20%
1000V	200kK to 20GK	5%
	20GK to 200GK	20%
2500V	200kK to 50GK	5%
	50GK to 500GK	20%
5000V	200kK to 100GK	5%
	100GK to 1TK	20%
Short circuit current	greater than 1 mA and less than 2mA	
Bar graph range	0 to 1TK	
Insulation test voltage accuracy	0% to + 10% at 1mA load current	
Induced AC mains current rejection	2 mA maximum	
Charging rate for capacitive load	5 seconds per µF	
Leakage current	1nA to 2mA	± (5% + 2nA)
Capacitance measurements	0.01µF to 15.00µF	± (15% rdg + 0.03µF)
Live circuit indicator	30V to 600V AC/DC, 50/60Hz	± (5% + 2V)
Timer increments; indicated to within 1 second	1 to 99 minutes; settable in 1 minute	
Ramp	0% to 100% of selected test voltage, or until breakdown.	

Operating Temperature: -20°C to 50°C
Storage Temperature: -20°C to 65°C
Relative humidity: 80% at 31°C, 50% at 50°C
Dust/water resistance: IP40
Operating Altitude: 0 to 2,000 mtrs.

Batteries: 12 volt, lead-acid, rechargeable
Size (HxWxD): 170 mm x 242 mm x 330 mm
Weight: 4 kg (with battery)
Two Year Warranty

Recommended Accessories

FVF-SC2
See page 109

1620 Series
Earth Ground Testers GEO

FLUKE®

Fluke 1623

Fluke 1625

Fluke 1625 kit

Included accessories

Fluke 1623: Protective holster, 2 test leads, 2 alligator clips, 1 shorting jumper, users manual
Fluke 1623 Kit: same as above plus stake/reel Set 4 pole and selective/stakeless clamp set
Fluke 1625: Protective holster, 2 test leads, 2 alligator clips, carrying strap, users manual
Fluke 1625 Kit: same as above plus stake/reel set 4 pole and selective/stakeless clamp set

Ordering information

Fluke 1623	Basic GEO Earth Ground Tester
Fluke 1623 Kit	Basic GEO Earth Ground Tester Kit
Fluke 1625	Advanced GEO Earth Ground Tester
Fluke 1625 Kit	Advanced GEO Earth Ground Tester Kit

Advanced technology for all your earth ground testing applications

The new Fluke 1620 Series Earth Ground Testers not only measure ground resistance using the classic 'fall of potential test' but also enable time saving testing using the 'selective' and 'stakeless' methods. 'Selective' testing does not require the electrode under test to be disconnected during the measurement, thus increasing safety. The simple 'stakeless' method quickly checks ground connections using two current transformers (probes) clamped around the ground conductor under test. Offering 'one-button' simplicity, the 1623 is an all-in-one earth ground tester, while the 1625 has extra versatility for more demanding applications.

Earth ground resistance and soil resistivity should be measured when:

- Designing earth ground systems
- Installing new ground system and electrical equipment
- Periodically testing ground and lightning protection systems
- Installing large electrical equipment such as transformers, switchgears, machines, etc.

Features

	1623	1625
One-button measurement concept	●	
3- and 4-pole earth ground measurement	●	●
4-Pole soil resistivity testing	●	●
2-Pole resistance measurement AC	●	●
2-and 4-pole resistance measurement DC		●
Selective testing, no disconnection of ground conductor (1 clamp)	●	●
Stakeless testing, quick ground loop testing (2 clamps)	●	●
Measuring frequency 128 Hz	●	
Earth impedance measurement at 55 Hz		●
Automatic frequency control (AFC) (94 – 128 Hz)		●
Measuring voltage switchable 20/48V		●
Programmable limits, settings		●
Continuity with buzzer		●
Dust/water resistance	IP56	IP56
Safety rating	CAT II 300 V	CAT II 300 V

Specifications

(Check the Fluke web for detailed specifications)

	1623	1625
Resistance ranges	0 to 20 kK	0 to 300 kK
Operating error	± 5%	± 5%
Test voltage	48V	20/48V
Short circuit current	> 50mA	250mA

Battery type: 6 x AA alkaline cells
Size (HxWxD): 110 mm x 180 mm x 240 mm
Weight – 1623 Geo: 1.1 kg (including batteries)
1625 Geo: 1.1 kg (including batteries)
Two Year Warranty

Recommended Accessories

EI-1623
Selective/stakeless clamp set for 1623

EI-1625
Selective/stakeless clamp set for 1625

ES-162P3
Stake/reel set for 3 pole measurements

ES-162P4
Stake/reel set for 4 pole measurements

EI-162BN
320mm Split core transformer for selective measurements on high voltage pylons

1621 Earth Ground Tester

FLUKE®

New

Fluke 1621

Handheld earth ground testing for mobile use

The Fluke 1621 is an easy-to-use earth ground tester. The first line of defense in detecting reliable ground connections, the unit features basic ground testing methods including 3-pole Fall-of-Potential as well as 2-pole ground resistance. Its convenient size, rugged holster, and large, clear LCD display make it an ideal field earth tester, for most work environments. With a simple user interface and intuitive functionality, the Fluke 1621 is a handy tool for electrical contractors, utility test engineers, and earth ground specialists.

Features

- 3-pole Fall-of-Potential earth testing for basic measurements
- 2-pole resistance measurements for added versatility
- Easily capture values with single-button operation
- Ensure accurate measurements with automatic 'noise' voltage detection
- Hazardous voltage warning offers increased user protection
- Clearly read and record data with a large, backlit display
- Rugged holster and design for tough work environments
- Portable size allows for easy transportation
- Instantly be alerted to measurements outside of your set limit, when you use the adjustable limit setting
- Safety rating CAT II 600 V

Specifications

(Check the Fluke web for detailed specifications)

	1621
Resistance range	0.15 K to 2 kK
Basic accuracy	± 6 % of measured value + 5D
Operating error according EN61557	± 18 % of measured value + 5D
Test voltage	23 to 24 V AC
Short circuit current	> 50 mA AC

Battery type: 1 x 9 V alkaline (LR61)
Size (HxWxD): 216 mm x 113 mm x 54 mm
Weight: 0.850 kg
Two Year Warranty

Included accessories

Two measuring leads with alligator clips - 2 m, protective holster, users manual, CD-ROM

Ordering information

Fluke 1621 Earth Ground Tester

Recommended Accessories

GEO CABLE-REEL 25M
Ground Earth Cable Reel 25 M Wire

GEO CABLE-REEL 50M
Ground Earth Cable Reel 50 M Wire

GEO EARTH STAKE
Ground Earth Stake

ES-162P3
Stake/reel set for 3 pole measurements

1630 Earth Ground Clamp Meter

FLUKE®

Fluke 1630

Included Accessories

Rugged carrying case with belt, Resistance test loop, 9 V battery, Operating instructions.

Ordering Information

Fluke 1630 Earth Ground Clamp Meter

Fast and easy earth ground loop testing

The Fluke 1630 earth ground clamp meter simplifies ground loop testing and enables non-intrusive leakage current measurement. The ground loop testing is also known as "stakeless" earth ground testing. To carry out the measurement there is no need for placing earth stakes and disconnecting the earth system from the electrical installation. The Fluke 1630 combines the two current clamps needed to perform the stakeless ground loop test in one compact and easy to use instrument.

- Ground loop resistance testing without any disconnection or additional earth stakes
- Earth ground leakage current measurement for system troubleshooting
- True RMS AC current measurement range up to 30 A
- Rapid evaluation of continuity without disconnection and audible HI/LO alarm
- Display-HOLD function to freeze measurements
- Recording function for automatic storage of measured values, which can be recalled later on the LCD display
- Automatic self calibration ensures correct measurement every time

The Fluke 1630 is ideally suited for the following applications:

- Ground loop checks on any earthing system
- Continuity tests on earth bonding circuits and connections
- Inspection of lightning protection systems
- Leakage current measurement for troubleshooting on earth ground systems

Specifications

(Check the Fluke web for detailed specifications)

	Range	Max. resolution
Resistance	0.025 to 1500 K	0.002 K
Continuity buzzer	< app. 40 K	
Leakage current	0.2 to 1000 mA	0.001 mA
Current	0.2 to 30 A	0.01 A

Weight: 0.64 kg
Conductor Size: 35 mm approx.
Size (HxWxD): 257 mm x 100 mm x 47 mm
Battery type: 9 V IEC 6 LR 61
Two Year Warranty

Installation Testers/ Portable Appliance Testers

Our multifunction testers have redefined the standards for ease-of-use. Designed for ensuring fixed wiring is installed according to IEC 60364, they perform all tests required to verify safety. Our Portable Appliance Testers verify the safety and operation of portable appliances, and are designed for 'one-touch' operation and a fast throughput.

1650 Series Multifunction Installation Testers

FLUKE®


Fluke 1653


Fluke 1652


Fluke 1651

The perfect installation testing solution

The Fluke 1650 Series testers verify the safety of electrical installations in domestic, commercial and industrial applications. They can ensure that fixed wiring is safe and correctly installed to meet the requirements of IEC 60364, HD 384 and all relevant local standards. The unique ergonomic design, low weight and padded neck-strap to free your hands, make operating a Fluke 1650 multifuction tester a pleasure. With easy-to-operate controls and large display with exceptionally wide viewing angle, it's also comfortable and safe to use.

- **Easy:** simply turn the knob, press the button and see the results
- **Efficient:** measure loop impedance without tripping RCDs, eliminating the need to bypass them
- **Rugged:** withstands a one-meter drop for demanding field use
- **Safe:** slim probe with test button keeps your eyes on the panel while probing hard to reach points
- **Comfortable:** compact and lightweight (less than 1.2 kg) for all day testing
- **Compliant:** meets all relevant standards including EN 61557 and VDE 0413

Rotary knob labeling is available in six versions. Select from English, French, German, Italian, Spanish or a user-friendly Symbols version.

EN 61557 COMPLIANT

500V CAT III

BS7671 16th Edition IEE Wiring Regulations IEC 60364.6.61, HD 384

Features

Measurement functions	1651	1652	1653
Voltage & Frequency	●	●	●
Wiring polarity	●	●	●
Insulation Resistance	500, 1000 V	250, 500, 1000 V	50, 100, 250, 500, 1000 V
Continuity	●	●	●
Loop & Line Resistance	●	●	●
PFC/PSC (short-circuit current)	●	●	●
RCD tripping time	●	●	●
RCD tripping current level		● ramp test	● ramp test
Automatic RCD test sequence		●	●
Test of pulse sensitive RCD's		●	●
Earth Resistance			●
Phase Sequence Indicator			●
Other features			
Self-test	●	●	●
EN 61557*/VDE 0413 compliant	●	●	●
Illuminated Display	●	●	●
Line voltage indicator	●	●	●
Battery indicator and battery test function	●	●	●
Memory, Interface			
Memory (500 measurements)			●
Computer interface			●
Time stamp (with FlukeView® Forms)			●
Software			option

* 1651: sections 1, 2, 3, 4, 6, 10
1652: sections 1, 2, 3, 4, 6, 10
1653: sections 1, 2, 3, 4, 5, 6, 7, 10

Included Accessories

TP165X Remote Control Probe (1652 and 1653 only)
TL165X STD Standard Test Lead Set
C1600 Hard Carrying Case
Mains Test Cord
Padded Carrying Strap
Quick Reference Guide
6 AA Cell batteries

Ordering Information

Fluke 1651 Multifunction Installation Tester
Fluke 1652 Multifunction Installation Tester
Fluke 1653 Multifunction Installation Tester

Check the Fluke website for the various software modules

Recommended Accessories

See also page 44 for more details


TLK290
Test Probe Kit


MTC1363 (UK)
Mains Test Cord


MTC77 (Europe)
Mains Test Cord


ES165X (1653)
Earth Spike Test Kit


FVF-SC2 (1653)
See page 109

1650 Series Multifunction Installation Testers

FLUKE®

The perfect installation testing solution

Slim probe design

Thanks to its slim probe with integral test button, you can safely make one-handed measurements on hard to reach points, while keeping your eyes on the panel.

Professional reports

Up to 500 test results can be stored in the 1653 installation tester. The data stored for each measurement consists of the test function, user selectable test conditions and unique references. Model 1653 has an IR port and adaptor to enable the results to be uploaded to a computer for preparing professional reports.

Complete kit

All 1650 models are equipped with detachable leads that can be replaced in case of damage or loss. A durable hard case will protect your instrument in tough field conditions.

Specifications

AC Voltage Measurement

Range	Resolution	Accuracy 50 Hz – 60 Hz	Input Impedance	Overload Protection
500 V	0.1 V	0.8% + 3	3.3 MΩ	660 Vrms

Continuity Testing

Range (autoranging)	Resolution	Test Current	Open Circuit Voltage	Accuracy
20 Ω	0.01 Ω	> 200 mA	> 4 V	± (1.5%+3 digits)
200 Ω	0.1 Ω			
2000 Ω	1 Ω			

Insulation Resistance Measurement

Model	Test Voltage	Insulation Resistance Range	Resolution	Test Current	Accuracy
1653	50 V	10 kΩ to 50 MΩ	0.01 MΩ	1 mA @ 50 kΩ	± (3%+ 3 digits)
1653	100 V	100 kΩ to 20 MΩ 20 MΩ to 100 MΩ	0.01 MΩ 0.1 MΩ	1 mA @ 100 kΩ	± (3%+ 3 digits) ± (3%+ 3 digits)
1653, 1652	250 V	100 kΩ to 20 MΩ 20 MΩ to 200 MΩ	0.01 MΩ 0.1 MΩ	1 mA @ 250 kΩ	± (1.5%+ 3 digits)
1653, 1652, 1651	500 V	100 kΩ to 20 MΩ 20 MΩ to 200 MΩ 200 MΩ to 500 MΩ	0.01 MΩ 0.1 MΩ 1 MΩ	1 mA @ 500 kΩ	± (1.5%+ 3 digits) + 10%
1653, 1652, 1651	1000 V	100 kΩ to 200 MΩ 200 MΩ to 1000 MΩ	0.1 MΩ 1 MΩ	1 mA @ 1 MΩ	± (1.5%+ 3 digits) + 10%

Loop Impedance Measurement

Range	Resolution	Accuracy
20 Ω	0.01 Ω	± (3% + 10 digits)
200 Ω	0.1 Ω	
2000 Ω	1 Ω	

PFC. PSC Test

Range	0 to 50 kA	
Resolution and Units	I_K < 1000 A	1 A
	I_K ≥ 1000 A	0.1 kA
Accuracy	Determined by accuracy of loop resistance and mains voltage measurements	

RCD Testing

RCD Type		1651	1652	1653
[1]AC	[2]G	●	●	●
AC	[3]S	●	●	●
[4]A	G		●	●
A	S		●	●

[1]AC – responds to AC [2]G – General, no delay [3]S – Time delay [4]A - Responds to pulsed signal

Tripping Time Test (ΔT)

Current Settings	Multiplier	Test Current Accuracy	Trip Time Accuracy
10, 30, 100, 300, 500, 1000 mA	x ½	± 0% - 10%	± (1% Reading + 1 digit)
10, 30, 100, 300, 500, 1000 mA	x 1	± 10% - 0%	± (1% Reading + 1 digit)
10. 30 mA	x 5	± 10%	± (1% Reading + 1 digit)

Tripping Current (Ramp) Test – Fluke 1653 and 1652 only

Current Range	Step size	Dwell time		Trip Current Measurement Accuracy
		Type G	Type S	
50% to 110% of RCD's rated current	10% of $I_{\Delta N}$	300 ms/step	500 ms/step	± 5%

Earth Resistance Test (R_E) – Fluke 1653 only

Range	Resolution	Accuracy
200 Ω	0.1 Ω	± (2%+ 5 digits)
2000 Ω	1 Ω	± (3.5%+ 10 digits)

Battery type: Alkaline supplied. usable with 1.2 V NiCD or NiMH rechargeable batteries
Size (HxWxD): 100 mm x 250 mm x 125 mm

Weight: 1.17 kg
Three Years Warranty

6000 Series PAT Testers

FLUKE®

Fluke 6200

Fluke 6500

Also available with European mains socket.

Versatile PAT testing at your fingertips

The Fluke 6200 and 6500 PAT testers verify the electrical safety and operation of portable appliances in accordance with relevant guidelines and regulations. With powerful auto test capabilities and simplified controls they increase the number of tests you can perform per day without compromizing results.

A choice of automatic and manual PAT testers

Both models perform all the tests required for class I and class II appliances. For manual testing and low volume applications, choose the cost-effective 6200 PAT model. If you need a more powerful instrument to test large numbers of appliances, the 6500 is the right choice.

Fluke simplifies portable appliance testing

- Compact and lightweight…
  Efficient to work with and easy to carry around– and has extra space in the hard case for accessories.
- One touch simplicity…
  Pre-set and user-definable test routines are initiated from a single button – to speed up test procedures and save you time on site.
- A better way of working…
  Rapid data entry via a QWERTY keyboard (or optional Fluke barcode scanner) and fast data transfer from the main memory or the Compact Flash memory card (6500).

6200

- Dedicated key for each test for 'one-touch' testing
- Pre-set pass/fail levels to save time
- Large backlit display for easy reading

6500

As 6200 but also with:

- Integral QWERTY keyboard for rapid data entry
- Slot for Compact Flash memory card for back-up data storage and transfer to PC
- Pre-set, auto-test sequences for user convenience

Features

Measurement functions	6200	6500
L N Mains Volts	●	●
Outside Limits Indicators	●	●
Null out facility for earth bond lead	●	●
Protective Earth Resistance PE (200mA)	●	●
Protective Earth Resistance PE (25A)	●	●
Insulation 500V dc	●	●
Protective Earth Conductor Current	●	●
Touch Current	●	●
Substitute Leakage Current	●	●
Appliance Power kVA	●	●
Appliance Load Current	●	●
Seven Segment Custom LCD	●	
Graphical LCD		●
Back Light	●	●
Compact Flash Card receptacle		●
Serial Port - Printing / Downloading	●	●
External printer output	●	●
Front Panel QWERTY Key pad		●
IEC Lead Test	●	●
Auto-testing		●
Pass / Fail Level Programmable Indicators		●
Data Storage		●
Limited Data Storage	●	
Polarity Checks	●	●
Graphical Help Menu On Line		●
Programme Mode		●
Real time clock		●
Front panel results management		●
230V BS1363 Test socket / 230V Mains BS1363 input power plug	●	●

300V CAT II

EN61010-1

Included Accessories

Test lead, Test probe, Crocodile clip, Mains cord

Ordering Information

Fluke 6200 PAT Tester
Fluke 6500 PAT Tester

Not available in all countries

6000 Series PAT Testers

Separate hard case

The compact Fluke PAT testers are supplied with a hard carrying case that not only offers protection during transit but also includes extra storage space for accessories and other tools. They're extremely light, weighing approximately 3 kg (without case) and have integral carrying handles for extra convenience.

Special PAT Kit

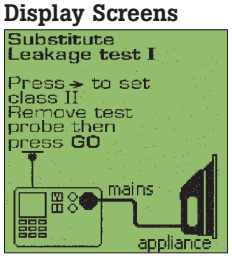
If you need a complete PAT tester solution, a purpose made kit is available.

Fluke 6500/UK Kit Contains:

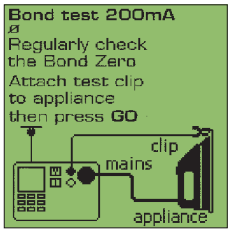
- 6500, Mainframe
- EXTL 100, Extension lead test adaptor
- SP Scan 15, Barcode scanner
- Fluke PowerPat Plus
- Pass 560R, Appliance pass labels
- Fail 100S, Appliance fail labels APP 1000, Barcode appliance number labels

(Kit contents may vary per country)

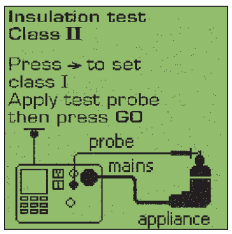
Display Screens



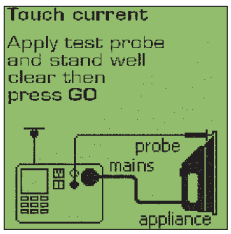
Substitute Leakage Current Test



Earth Bond Test (RPE)



Insulation Test (RISO)



Touch Current Test

Specifications

The accuracy specification for the display range is defined as ± (%reading + digit counts) at 23 °C ± 5 °C, ≤ 75 % RH. Between 0 °C and 18 °C and between 28 °C and 40 °C, accuracy specifications may degrade by 0.1 x (accuracy specification) per °C. The measurement range meets the service operating errors specified in EN61557-1: 1997, EN61557-2: 1997 , EN61557-4: 1997.

Power-on Test	
The test indicates reversed L-N, missing PE, and measures the mains voltage and frequency.	
Display Range	90 V to 264 V
Accuracy at 50 Hz	± (2% + 3 counts)
Resolution	0.1 V (1V - model 6200)
Input Impedance	> 1 MΩ // 2.2 µF
Maximum Input Mains Voltage	300 V

Earth Bond Test (Rpe)	
Display Range	0 to 19.99 Ω
Accuracy (after Bond Test zeroing)	± (5% + 4 counts)
Resolution	0.01 Ω
Test Current	200 mA ac -0% +40% into 1.99Ω 25 A ac ± 20% into 25 mΩ at 230 V
Open Circuit Voltage	> 4 V ac, < 24 Vac
Bond Test Zeroing	can subtract up to 1.99Ω

Insulation Test (Riso)	
Display Range	0 to 299 MΩ
Accuracy	± (5% + 2 counts) from 0.1 to 50 MΩ ±(10% + 2 counts) from 50 to 299 MΩ
Resolution	0.01 MΩ (0 to 19.99 MΩ) 0.1 MΩ (20 to 199.9 MΩ) 1 MΩ (200 to 299MΩ)
Test Voltage	500 V dc –0% +25% at 500 kΩ load
Test Current	>1 mA at 500 kΩ load, < 15 mA at 0Ω
Auto discharge time	< 0.5 s for 1 µF
Max. Capacitive Load	operational up to 1 µF

Touch Current Test	
Display Range	0 to 1.99 mA ac
Accuracy	± (4% + 2 counts)
Resolution	0.01 mA
Internal Resistance (via probe)	2 kΩ
Measuring method	Probe
The appliance under test is energized at mains potential.	

Substitute Leakage Current Test	
Display Range	0 to 19.99 mA ac
Accuracy	± (5% + 5 counts)
Resolution	0.01 mA
Test Voltage	35 V ac ± 20%
Operational Error	10%

Load/ Leakage Test: Load Current	
Display Range	0 to 13 A
Accuracy	± (4% + 2 counts)
Resolution	0.1 A
The appliance under test is energized at mains potential.	

Load/Leakage Test: Load Power	
Display Range	0 to 999 VA 1.0 kVA to 3.2 kVA
Accuracy	± (5% + 3 counts)
Resolution	1 VA (0 to 999 VA) 0.1 kVA (1.0 kVA to 3.2 kVA)
The appliance under test is energized at mains potential.	

Load/Leakage Test: Leakage Current	
Display Range	0.25 to 19.99 mA
Accuracy	± (4% + 4 counts)
Resolution	0.01 mA
The appliance under test is energized at mains potential.	

PELV Test	
Accuracy at 50 Hz	± (2% + 3 counts)
Overload protection	300 Vrms
Warning threshold	25 Vrms

Size (HxWxD): 200 mm x 275 mm x 100 mm
Weight: 3 kg
Two Years Warranty

Recommended Accessories

See also page 44 for more details

Fluke PowerPat Plus software

SP1000-02
Mini printer

SP-SCAN-15
Barcode scanner (6500 Fluke only)

BDST3 Snap Tags
Cable Tie

PASS
Appliance 560R Pass Labels

1650 Series/6000 Series Accessories

FLUKE®

Accessories for Fluke 1650 Series Installation Testers

ES165X Earth Spike Test Kit (Fluke 1653)
Earth Spike Test kit contents:
- Auxiliary earth probes
- Test connection leads and crocodile clips
- Purpose-made carry case

FVF-SC2 Fluke ViewForms Software (Fluke 1653)
To address the increasing demands for reporting and documentation, Fluke presents FlukeView Forms documenting software. Download the data from the Fluke 1653 and create an easy report. The Fluke ViewForms Software also supports other Fluke tools. See page 109.

TLK 290 Test Probe Kit
- Kit includes three flexible socket probes and a large alligator clip
- To be used on three phase sockets
- Probes have flexible width test points that fit securely in 4 to 8 mm sockets
- CAT III 1000 V, 8 A

MTC1363

MTC77

Mains Test Cord for 1650 series

MTC1363	UK plug
MTC77	Schuko plug

Accessories for Fluke 6500 Series Portable Appliance Testers

PASS560R Appliance Pass Labels
Quantity 600

APP1000/APP2000 Bar Code Appliance Number Labels
APP1000: Labels numbered 0001-1000
APP2000: Labels numbers 1001-2000
Label number >2000 on request

BDST3/BDST4 Snap Tags
BDST3: Cable Tie
BDST4: Clip On
Quantity 20. Labels need to be purchased separately.

EXTL100 (UK plug)

EXTL100-02 (Schuko plug)

EXTL100 Extension Lead Test Adaptor
Adaptor for testing extension leads. Allows the earth test lead to be connected to the extension leads to perform insulation and earth bond tests.

SPScan15 Barcode Scanner
Easy to use, low current, intelligent barcode reader. SPScan15 can be used to scan barcodes attached to curved surfaces or where actual contact with the barcode surface is difficult.

SP1000 Mini Printer
Without using any additional software the SP1000 can be used to directly printout stored test records on to thermal paper. The printer is compact and easily transported and is ideal for test professionals who need to issue an immediate written account of work carried out. The printer is powered by a rechargeable battery and comes complete with mains charger and RS232 Printer Lead.

SP1000 Paper
Replacement thermal paper for the SP1000 Mini Printer

Fluke DMS software for 1650/6000 Series

The Fluke DMS (Data Management Software) is an efficient program for administration and reporting of installation tests in compliance with EN 60364, DIN VDE 0100/0105 and appliance tests in compliance with DIN VDE 0701/0702, ÖVE E 8701.

DMS 0100/INST Software for Installation Tester Fluke 1653
Supporting reports for Austria, Germany, Switzerland, Netherlands

DMS 0702/PAT Software for Portable Appliance Tester Fluke 6500
Supporting reports for Austria, Germany, Netherlands

DMS COMPL PROF Software for the Fluke 1653 and Fluke 6500
Supporting reports for Austria, Germany, Switzerland, Netherlands

Check the Fluke web for more information.

Digital Thermometers

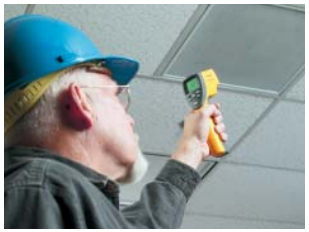
For troubleshooting systems where temperature is a critical symptom, our digital thermometers provide you with laboratory accuracy wherever you need it. We offer a choice of non-contact, laser-guided infrared thermometers for safely getting at hard-to-reach, electrically live or particularly hot targets, and contact thermometers with a full range of thermocouple probes.

Infrared Thermometer Selection Guide	Fluke 60 Series					Fluke 560 Series			Fluke 570 Series		
	Fluke 61	**Fluke 62**	**Fluke 63**	**Fluke 66**	**Fluke 68**	**Fluke 561**	**Fluke 566**	**Fluke 568**	**Fluke 572**	**Fluke 574**	**Fluke 576**
Temperature range	– 18 to 275° C	– 30 to 500° C	– 32 to 535° C	– 32 to 600° C	– 32 to 760° C	– 40 to 550° C	– 40 to 650° C	– 40 to 800° C	– 30 to 900°C	– 30 to 900°C	– 30 to 900°C
Accuracy	2%	1.5%	1%	1%	1%	1%	1%	1%	0.75%	0.75%	0.75%
Response time	< 500 mSec	< 500 mSec	< 500 mSec	< 500 mSec	< 500 mSec	< 500 mSec	< 500 mSec	< 500 mSec	< 250 mSec	< 250 mSec	< 250 mSec
Optical resolution	8:1	10:1	12:1	30:1	50:1	12:1	30:1	50:1	60:1 (50:1 with close focus)	60:1 (50:1 with close focus)	60:1 (50:1 with close focus)
Close focus model available									●	●	●
Recommended distance to spot	Up to 2 m	Up to 2 m	Up to 2.5 m	Up to 4.5 m	Up to 7.5 m	Up to 2.5 m	Up to 4.5 m	Up to 7.5 m	300 mm (with close focus) up to 10.5 m	300 mm (with close focus) up to 10.5 m	300 mm (with close focus) up to 10.5 m
Laser sighting	single-point laser	single-point laser	single-point laser	single-point laser	single-point laser	single-point laser	single-point laser	single-point laser	3-point laser	3-point laser	3-point laser
Adjustable emissivity				●	●	●	●	●	●	●	●
MIN/MAX readings		-/●	-/●	●	●	●	●	●	●	●	●
AVG readings				●	●		●	●		●	●
DIF readings				●	●	●	●	●		●	●
Backlit LCD	●	●	●	●	●	●	●	●	●	●	●
Bar graph display									●	●	●
Audible Hi/Lo alarm				●	●		●	●	●/-	●	●
Visible Hi/Lo alarm				●	●		●	●	●/-	●	●
Includes contact probe						●	●	●		●	●
Probe input (types)				RTD	RTD	Type K Thermocouple	Type K Thermocouple	Type K Thermocouple		Type K Thermocouple	Type K Thermocouple
Data logging (number of measurements)				12 points	12 points		20 points	99 points		100 points	100 points
PC interface								USB		RS232	USB
Compatible with FlukeView Forms software								●		●	●
Built-in digital camera											●
See catalog page	48	48	48	48	48	50	49	49	46	46	46

Recommended Applications

Contact thermometers
For our complete range of contact thermometers, see page 51.

Plant/facilities maintenance
Preventive and predictive maintenance
Energy audits
Vehicle and fleet maintenance programs
Faulty electrical/circuit connections
Petrochemical/hazardous locations
Motors, pumps and bearings



Heating/ventilation/air conditioning/ refrigeration
Leaky ductwork
Thermostats
Temperature balancing
Steam distribution systems
Compressor lines

Manufacturing processes
Molding temperature measurement
Printing, paper and converting
Thermoforming plastics
Electronics
Paint curing/drying
Food
Chemical and pharmaceutical

Safety and protection
Fire localization
Hazardous materials
Faulty ballasts
Search and rescue
Smoldering embers
Equipment maintenance

570 Series
Precision Infrared Thermometers

FLUKE®

Fluke 576

Fluke 572 Fluke 574

Measure temperature with ease and precision

The Fluke 570 series are the most advanced IR non-contact thermometers, and are ideal for predictive and preventative maintenance applications.
Offering a broad temperature range and a true dimension laser sighting system for precise targeting resulting in more accurate measurements. When requiring analysis and documentation use the 100-point data logging and software for graphing and analysis. The top-of-the-range Fluke 576 even has a built-in digital camera that photographs the location when the temperature measurement is made. From close-up electrical connections, to far-distance room balancing checks, the Fluke 570 series can take IR temperature measurements with ease and precision.

- Enhanced optics allows measurements of smaller objects from farther away
- True Dimension™ three-dot laser sighting system highlights the true diameter of measurement spots at all distances
- Adjustable emissivity setting and 30 pre-set common material values for more accurate measurements
- 100 data point memory for storage of measurements (Fluke 574, 576) and photographic images (Fluke 576)
- Instantly captures photographs of temperature measurement locations for improved documentation (Fluke 576 only)

Features

	572	574	576
Temperature range		-30 to 900°C	
Optical resolution		Standard: 60:1 Close focus: 50:1	
3 dot laser beam for accurate targeting	●	●	●
Adjustable emissivity	●	●	●
Bar graph display	●	●	●
Backlit LCD display	●	●	●
Use selectable °C or °F	●	●	●
Audible and visible Hi/Lo Alarm	●/-	●/●	●/●
MIN/MAX	●	●	●
AVG/DIF readings		●	●
Datalogging (number of measurements)		100	100
PC interface		RS232	USB
Built-in Digital camera			●

Specifications

	572	574	576
Temperature range		-30 to 900°C	
Response time		250ms (95 % of reading)	
Resolution		0.1°C of reading up to 900°C	
Repeatability		±0.5% of reading or ±1°C*	
Accuracy: (assumes ambient operating temperature of 23 °C to 25 °C)		±0.75% of reading, ±0.75°C *	
Typical distance to target		10,5 m	
Emissivity		Digitally adjustable from 0.10 to 1.0 by 0.01	

*whichever is greater.

Battery Life:
Fluke 572, 574: 10 hours typical
Fluke 576: 8 hours typical (13 hours with photographic mode off)

Size (HxWxD):
Fluke 572/574: 200 mm x 170 mm x 55 mm
Fluke 576: 240 mm x 170 mm x 55 mm

Weight: Fluke 572: 0.480 kg
Fluke 574: 0.480 kg
Fluke 576: 0.580 kg

Two years warranty

Included Accessories

Fluke 572: Hard case, 2 batteries
Fluke 574: Hard case, 2 batteries, Thermocouple K probe, 220V power supply, IRGraph software, RS232 cable
Fluke 576: Hard case, 2 batteries, Thermocouple K probe, DataTemp software, USB cable.

Ordering Information

Fluke 572	Precision Infrared Thermometer
Fluke 574	Precision Infrared Thermometer
Fluke 576	Precision Infrared Thermometer
Fluke 572CF	Precision Infrared Thermometer with close focus option
Fluke 574CF	Precision Infrared Thermometer with close focus option
Fluke 576CF	Precision Infrared Thermometer with close focus option

Recommended Accessories

AN5
Analog data cable

C570
See page 106

60 Series Infrared Thermometers

FLUKE®

The Fluke FoodPro™ thermometer series provide advanced temperature measurement solutions for the foodservice industry. Check the Fluke web for more information.

Included Accessories

Fluke 61: 9V Battery
Fluke 62: 9V Battery, storage holster
Fluke 63, 66 and 68: Hard carrying case, 9V batteries

Ordering information

Fluke 61 Infrared Thermometer
Fluke 62 Mini Infrared Thermometer
Fluke 63 Infrared Thermometer
Fluke 66 Infrared Thermometer
Fluke 68 Infrared Thermometer

Point, press and read temperature

The Fluke 60 Series non-contact thermometers are the ideal professional diagnostic tools for quick and accurate temperature measurements.
These handheld tools are ideal for measuring surface temperatures of rotating, hard-to-reach, electricity live or dangerously hot targets like electrical motors and – panels, and heating and ventilation systems. The laser sighting system guides measurements to the right target and in less than a second, the large temperature display provides a readout of the surface temperature.

The 60 Series IR thermometers feature:

- Laser guided sighting system for easy targeting with 1% accuracy
- Up to 12 points datalogging with Min, max average functions
- Up to 50:1 optical resolution
- Choice between models with fixed or adjustable emissivity
- Backlit display for easy reading in the dark
- Temperatures up to 760°C

Features

	61	62	63	66	68
Form factor	Flat grip	Pistol grip	Pistol grip	Pistol grip	Pistol grip
Temperature range	-18 to 275°C	-30 to 500 °C	-32 to 535°C	-32 to 600°C	-32 to 760°C
Optical resolution	8:1	10:1	12:1	30:1	50:1
Laser beam for accurate targeting	●	●	●	●	●
Backlit LCD display	●	●	●	●	●
Use selectable °C or °F	●	●	●	●	●
MIN/MAX/AVG/DIF readings		Max	Max	●	●
Datalogging				●	●
Hi/Lo Alarm				●	●
Adjustable emissivity				●	●

Specifications

	61	62	63	66	68
Range	-18 to 275°C	-30 to 500 °C	-32 to 535°C	-32 to 600°C	-32 to 760°C
Response time	<500ms	<500ms (95 % of reading)	A 0.5 second	A 0.5 second	A 0.5 second
Resolution	0.2°C	0.2°C	0.2°C	0.1°C	0.1°C
Repeatability (% of reading)	± 2% or ± 2°C*	±0.5% or < ±1°C*	± 0.5% or A ± 1°C*	± 0.5% or A ± 1°C*	± 0.5% or A ± 1°C*
Accuracy: (assumes ambient operating temperature of 23°C)	For targets at: -18 to -1°C: ± 3°C -1 to 275°C: ± 2% of reading or ± 2°C*	For targets at: 10 °C to 30 °C: ±1 °C ± 1.5% of reading or ± 1.5°C whichever is greater over the balance of the range	For targets at: -32 to -26°C: ± 3°C -26 to -18°C: ± 2.5°C -18 to 23°C: ± 2°C 23°C -510°C: ± 1% of reading or ± 1°C* For targets above 510°C: ± 1.5% of reading	For targets at: -32 to -26°C: ± 3°C -26 to -18°C: ± 2.5°C -18 to 23°C: ± 2°C For targets above 23°C: ± 1% of reading or ± 1°C*	For targets at: -32 to -26°C: ± 3°C -26 to -18°C: ± 2.5°C -18 to 23°C: ± 2°C For targets above 23°C: ± 1% of reading or ± 1°C*
Typical distance to target	Up to 1m	Up to 1,5 m	Up to 2 m	5 m	8 m
Emissivity	Fixed at 0.95	Pre-set to 0.95	Fixed at 0.95	Digitally adjustable from 0.1 to 1.0 by 0.01	Digitally adjustable from 0.1 to 1.0 by 0.01

* whichever is greater

Battery Life:
Fluke 66 and 68: 20 hours with laser and backlight on 50%
Fluke 63: 10 hours with laser and backlight on
Fluke 62: 12 hours with laser and backlight on
Fluke 61: 12 hours with laser and backlight on

Size (HxWxD):
Fluke 63, 66 and 68: 200 mm x 160 mm x 55 mm
Fluke 62: 152 mm x 101 mm x 38 mm
Fluke 61: 184 mm x 45 mm x 38 mm

Weight:
Fluke 63, 66 and 68: 0.320 kg
Fluke 62: 0.200 kg
Fluke 61: 0.227 kg

Fluke 62: 2 years warranty
Other models: one year warranty

Recommended Accessories

C23
See page 106

80PR-60
See page 105

H6
See page 107

566 and 568 Multipurpose Thermometers32

FLUKE®

Fluke 566

Fluke 568

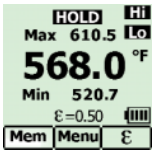
The two-in-one infrared and contact thermometer with an innovative graphical display

With a straight-forward, menu-driven user interface and graphical display, the Fluke 566 and 568 multipurpose thermometers make even complex temperature measurements easy. Quickly navigate and adjust emissivity, start data logging, or turn on and off alarms, with just a few pushes of a button. For added convenience, both rugged handheld thermometers combine contact and non-contact temperature measurement capability, providing a total temperature measurement solution for any service and maintenance program.

- Easily access advanced features with the soft-key buttons and graphical display
- Measure smaller targets from farther away using the IR thermometer
- Adjustable emissivity and built-in table of common materials for higher IR accuracy
- Quickly identify problems with the MIN, MAX, AVG, and DIF functions
- 2-color flashing alarm alerts you visually when measurements exceed limits
- Includes Type K thermocouple bead probe
- Compatible with all standard mini-connector K-type thermocouples
- Data logging with a date/time stamp
- Soft rubber boot for increased ruggedness
- User interface available in 6 languages

Choose your language

Select the measurement surface



See complete measurement details in seconds

The Fluke 566 and included accessories

The Fluke 568 and included accessories

Product specifications

(Check the Fluke web for detailed specifications)

	566	568
Infrared temperature range	–40 °C to 650 °C	–40 °C to 800 °C
Infrared accuracy	< 0 °C : ± (1.0 °C + 0.1°/1 °C); > 0 °C : ± 1 % or ± 1.0 °C, whichever is greater	
Display resolution	0.1 °C	
Infrared spectral response	8 µm to 14 µm	
Infrared response time	< 500 msec	
Input temperature range	–270 °C to 1372 °C	
Input accuracy	–270 °C to –40 °C: ± (1 °C + 0.2 °/1 °C) –40 °C to 1372 °C: ± 1 % or 1 °C, whichever is greater	
D:S (Distance to measurement spot size)	30:1	50:1
Laser sighting	Single-point laser < 1 mw output Class 2 (II) operation, 630 nm to 670 nm	
Minimum spot size	19 mm	
Emissivity adjustment	By built-in table of common materials or digitally adjustable from 0.10 to 1.00 by 0.01	
Data logging with Date/Time stamp	20 points	99 points
PC interface and cable	None	USB 2.0 with FlukeView® Forms software
Hi/Low alarms	Audible and two-color visual	
Min/Max/Avg/Dif	Yes	
Display	Dot matrix 98 x 96 pixels with function menus	
Backlight	Two levels, normal and extra bright for darker environments	
Trigger Lock	Yes	
Switchable between Celsius and Fahrenheit	Yes	

Power: 2 AA/LR6 Batteries (566); 2 AA/LR6 Batteries and USB for use with a PC (568)
Battery life: Used continuously; laser and backlight on: 12 hours; laser and backlight off: 100 hours

Weight: 0.965 kg (566); 1.026 kg (568)
Size (HxLxW): 25.4 cm x 19.1 cm x 6.9 cm
Operating temperature: 0 °C to 50 °C
Storage temperature: –20 °C to 60 °C
Two years warranty

Included accessories

FlukeView® Forms software (568 only), USB cable (568 only), K-type thermocouple bead probe, 2 AA batteries, hard carrying case, quick start guide, and users manual.

Ordering information

Fluke 566 Infrared thermometer
Fluke 568 Infrared thermometer

Recommended Accessories

H6
Infrared Thermometer Holster
See page 107

80PK-8
Pipe Clamp Temperature Probe
See page 104

80PK-9
General Purpose Probe
See page 104

80PK-11
Velcor Temperature Probe
See page 104

80PK-25
SureGrip Piercing Probe
See page 104

80PK-26
SureGrip General Purpose Probe
See page 104

561
Multipurpose Thermometer

FLUKE ®

Fluke 561

Combined Infrared and Contact Thermometer

The Fluke 561 combines the temperature measurement functions that industrial, electrical, and HVAC/R professionals need, all in one tool. It measures both IR and contact temperature, replacing several other test tools. It's fast, efficient, and easy to use, saving you valuable time and effort. With the Fluke 561, you can take contact and ambient temperatures in the way that's best for you. Use the IR thermometer to measure hot, moving, electrically energized, and hard-to-reach objects instantly. Check motors, insulation, breakers, radiant heating, pipes, corroded connections, and wires. Plus, scan ducts, and other hard-to-reach objects from the floor—leave your ladder in the truck. You can use the Fluke 561's handy Velcro® pipe probe or, plug in any industry standard, K-type mini-connector thermocouple probe you already own.

- IR thermometer for quick measurements up close or at a distance
- Single-point laser sighting
- Easy emissivity adjustment for measuring pipes and ducts more accurately
- Includes a Velcro pipe probe for super-heat and sub-cooling as well as other surface contact measurements
- Also compatible with all standard mini-connector K-type thermocouples
- MIN, MAX and DIF temperature readings
- Lightweight (only 340 grams) and portable
- Includes measurement guide

The Fluke 561 includes everything you need for immediate inspections.

Specifications

Temperature range	-40° to 550°C
Display resolution	0.1° of reading
D:S (Distance to spot size)	12:1
Easy emissivity selector	Adjustable with three settings: low (0.3), medium (0.7), high (0.95)
Display accuracy (Assumes ambient operating temperature of 23° to 25°C)	± 1.0% of reading or ± 1°C, whichever is greater; below 0°C, ± 1°C, ± 1°/1°
Response time	500 mSec (95% or reading)
Repeatability	± 0.5% of reading or ± 1°C, whichever is greater
Spectral focus	8 µm to 14 µm
Laser sighting	Single-point laser
Laser shutoff	Laser turns off above ambient temperature of 40°C
Laser power	Class 2 (II) operation; output ‹ 1 mW, wavelength 630 nm to 670 nm
Relative humidity	10% to 90% RH non-condensing, at < 30°C
Power	2 AA batteries (alkaline or NiCD)
Display hold	7 seconds
Backlit display	Yes, LCD with dual temperatures (current and MAX/MIN/DIF/KTC), low battery, F/C indicator, and Scan/Hold options
Operating temperature	0° to 50°C
Storage temperature	-20 to 65°C
MAX, MIN, DIF temperatures	Yes
Thermocouple type K mini-adapter input	Yes, compatible with industry standard type K probes with mini-connector
Thermocouple type K Velcro pipe probe	Yes, with a temperature range of 0° to 100°C and accuracy of ± 2.2°C
Measurement guide	Yes

Battery Life (alkaline): 12 hours
Size (HxLxW): 176,9 mm x 163,6 mm x 51,8 mm
Weight: 340 grams
Two years warranty

Included accessories
Thermocouple K-type Velcro pipe probe, hand carrying case, 2 AA batteries and user manual with measurement guide.

Ordering information
Fluke 561 HVACPro Thermometer

Recommended Accessories

H6
See page 107

80-PK-1
See page 104

80PK-8
See page 104

80PK-25
See page 104

50 Series II Thermometers

FLUKE®

Fluke 54 II

Fluke 51 II

Fluke 52 II

Fluke 53 II

Laboratory accuracy. Wherever you go.

The Fluke 50 Series II contact thermometers offer fast response and laboratory accuracy (0.05% + 0.3°C) in a rugged handheld test tool.

- Large backlit dual display shows any combination of T_1, T_2 (52 and 54 only), T_1–T_2 (52 and 54 only) plus MIN, MAX, or AVG
- Relative time clock on MIN, MAX, and AVG provides a time reference for major events
- Electronic Offset function allows compensation of thermocouple errors to maximize overall accuracy
- Readout in °C, °F, or Kelvin (K)
- Sleep mode increases battery life
- Battery door allows easy battery replacement without breaking the calibration seal

Additional features for the 53 and 54 Series II:

- Data Logging up to 500 points of data with user adjustable recording interval
- Real time clock captures the exact time of day when events occur
- Recall function allows logged data to be easily reviewed on the meter display
- IR communication port allows data to be exported to optional FlukeView® Temperature PC software

Features

	51 II	52 II	53 II	54 II
Thermocouple types	J,K,T,E	J,K,T,E	J,K,T,E,N,R,S	J,K,T,E,N,R,S
Number of inputs	Single	Dual	Single	Dual
Time stamp	Relative Time	Relative Time	Time of Day	Time of Day
Splash/Dust resistant	●	●	●	●
Dual display with backlight	●	●	●	●
Min/Max/Avg recording	●	●	●	●
(T_1-T_2) True differential		●		●
Data logging up to 500 points			●	●
IR data port for interface to PC			●	●
Compatible with optional FlukeView Software			●	●

Specifications

Temperature range:			
J-type	Thermocouples	-210°C to 1200°C	(-346°F to 2192°F)
K-type	Thermocouples	-200°C to 1372°C	(-328°F to 2501°F)
T-type	Thermocouples	-250°C to 400°C	(-418°F to 752°F)
E-type	Thermocouples	-150°C to 1000°C	(-238°F to 1832°F)
N-type**	Thermocouples	-200°C to 1300°C	(-328°F to 2372°F)
R** and S-type**	Thermocouples	0°C to 1767°C	(32°F to 3212°F)
Temperature accuracy			
Above –100°C (-148°F):			
J, K, T, E, and N-type**		± [0.05% + 0.3°C (0.5°F)]	
R** and S-type**		± [0.05% + 0.4°C (0.7°F)]	
Below –100°C (-148°F):			
J, K, E, and N-types		± [0.20% + 0.3°C (0.5°F)]	
T-type		± [0.50% + 0.3°C (0.5°F)]	

**Only the Fluke Models 53 and 54 Series II thermometers are capable of measuring N, R, and S-type thermocouples.

Battery life: 1000 hours typical, AA
Size (HxWxD): 173 x 86 x 38 mm
Weight: 0.4 kg
Three Year Warranty

Included Accessories

Impact absorbing holster
Two bead probe thermocouples 80PK-1 (54+52)
One bead probe thermocouple 80PK-1 (51+53)

Ordering Information

Fluke 51 II	Thermometer
Fluke 52 II	Thermometer
Fluke 53 II	Thermometer
Fluke 54 II	Thermometer
FVF-SC1	FlukeView Forms Software including interface cable

Recommended Accessories

C25
See page 106

80PK-26
See page 104

80PK-25
See page 104

FVF-SC1
See page 109

TPAK
See page 109

Thermal Imagers

Temperature changes can indicate problems in many everyday applications and a thermal imager makes it quick and easy to visually check surface temperatures. Often problems can be discovered before contact measurements even need to be made. Fluke offers a complete range of handheld thermal imagers for both industrial and building diagnostic applications. Models are available for any budget.

Ti Series Thermal Imagers

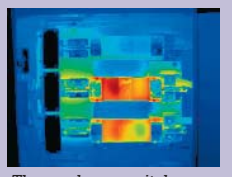
FLUKE®

Find it, fix it, fast!

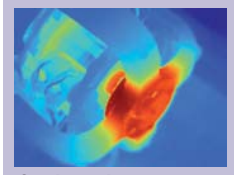
Temperature changes can indicate problems in many areas you see everyday, some include:

- **Inside electrical distribution and service** (Switch gear, panels, controls, fuses, transformers, receptacles, lighting, conductors, bus bars, motor control centers)
- **Motors, pumps and mechanical** (Electric motors and generators, pumps, compressors, evaporators, bearings, couplings, gearboxes, gaskets/seals, belts, rollers, disconnects)
- **Process** (Tanks and vessels, pipes, valves and traps, reactors, process insulation)
- **HVAC/R** (air conditioning, heating, air handlers, refrigeration)
- **Outside electrical distribution - utilities** (Transformers, bushings, insulators, transmission lines, other exterior conductors, service connections, disconnects, capacitor banks)

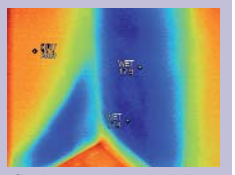
Overheating bearing cap



Three-phase switch-gear load imbalance



Overheated motor



Cool corner in a building

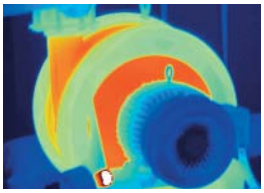
FREE thermal imaging application DVD

This DVD covers the principles of thermal imaging and looks at using this powerful troubleshooting technology in electrical, electro-mechanical and process control applications. Order your copy at www.fluke.co.uk/DVD or www.fluke.eu/DVD.

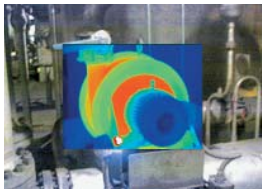
IR-Fusion® Technology: Infrared and visual images fused together in one image

See things both ways - Infrared and visual (visible light) images fused together communicating critical information faster and easier – traditional infrared images are no longer enough. Patent-pending IR-Fusion® Technology, only available from Fluke, simultaneously captures a digital photo and the infrared image and fuses them together taking the mystery out of IR image analysis.
Imaging enhanced with IR-fusion help identify and report suspect or faulty components enabling repairs to be done as well as prove that the problem was corrected.

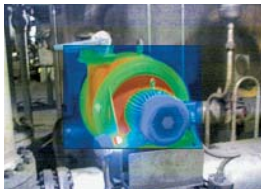
Multiple viewing modes
Identify problems quickly using different on-screen models – the user selects the mode that works best for each situation. While some viewing modes are not included in every model, all are available for viewing and analysis in the included free SmartView™ software.



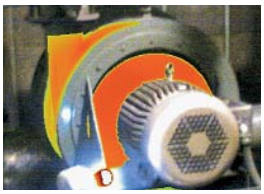
Full IR



Picture-in-Picture



Alpha Blending



IR/Visible Alarm

Full Visible Light

IR-Fusion®

Selection Table Industrial Applications

	Ti10	Ti25	Ti20	Ti40FT/Ti45FT	Ti50FT/Ti55FT
Detector type	160 x 120	160 x 120	128 x 96	160 x 120	320 x 240
IR-Fusion	●	●		●	●
Field of View (FOV)	23° x 17°	23° x 17°	20° x 15°	23° x 17°	23° x 17°
Optional lenses				●	●
180° articulating lens				●	●
Thermal sensitivity	A 0.2 °C	A 0.1 °C	A 0.2 °C	down to A 0.08 °C	down to A 0.05 °C
Temperature range	250 °C	350 °C	350 °C	up to 600 °C*	up to 600 °C
Digital display	3.6" LCD	3.6" LCD	3" LCD	5" LCD	5" LCD
Video output				●	●
Choice of palettes	4	6	10	8	8
PdM routing function			●		
Voice annotation		●			
Software	SmartView	SmartView	InsideIR	SmartView	SmartView
Storage capacity	>3000 IR images	>3000 IR images	100 IR images	>1000 IR images	>1000 IR images

*1200 °C option available

Ti10/Ti25 Thermal Imagers

FLUKE®

New

Fluke Ti10/Ti25

IR-Fusion™

Complete package

Included Accessories

SmartView™ software
2 GB SD card
SD card reader
Rugged hard carrying case
Soft carrying case
Hand strap
Rechargeable battery
AC charger/power supply
User manual

Ordering Information

Fluke Ti10 Thermal Imager
Fluke Ti25 Thermal Imager

The ultimate tools for troubleshooting and maintenance

The Fluke Ti10/Ti25 are the perfect tools to add to your problem solving arsenal. Built for tough work environments, these high-performance, fully radiometric imagers are ideal for troubleshooting electrical systems, electro-mechanical equipment, process equipment, HVAC/R equipment and others.

- Enhanced problem detection and analysis capabilities with patent-pending IR-Fusion® Technology
- Optimized for field use in harsh work environments
  - Engineered and tested to withstand a 2 meter drop
  - Withstands dust and water – tested to an IP54 rating
  - Innovative protective lens cover protects the lens when not in use
- Delivers the clear, crisp images needed to find problems fast
  - Identify even small temperature differences that could indicate problems with excellent thermal sensitivity (NETD)
  - Even the smallest details become visible with the large, widescreen full color LCD display
- Intuitive, three-button menu is easy to use … simply navigate with the push of a thumb
- No need to carry pen and paper – record findings by speaking into the camera – comments are saved with the image (Ti25 only)
- Store more than 3.000 screen images (.bmp format) or 1.200 IR-Fusion images on included 2 GB SD memory card

Specifications

(Check the Fluke web for detailed specifications)

	Fluke Ti10	Fluke Ti25
Thermal imaging performance		
Field of view (FOV)	23 ° horizontal x 17 ° vertical	
Spatial resolution (IFOV)	2.5 mrad	
Min focus distance	15 cm	
Thermal sensitivity (NETD)	ΔO.2 °C at 30 °C	ΔO.1 °C at 30 °C
Minimum span (Auto/Manual)	10 °C / 5 °C	5 °C / 2.5 °C
Focus	Manual	
Detector type	160 x 120 Focal Plane Array, uncooled microbolometer	
Visual imagng performance		
Min focus distance	46 cm	
On camera operating modes	Full Picture-in-Picture and full screen IR	Picture-in-Picture and full screen IR plus Blending
Visible light camera	640 x 480 pixels, full color	
Temperature measurement		
Temperature range	-20 °C to 250 °C	-20 °C to 350 °C
Accuracy	± 5 °C or 5%	± 2 °C or 2%
Measurement modes	Center point	"Center point and hot and cold markers"
On screen emissivity correction		●
Image presentation		
Digital display	9.1 cm (3.6") landscape color VGA (640x480) LCD"	
LCD backlight	Selectable bright or auto	
Palettes	Ironbow, blue-red, high contrast, grey	Ironbow, blue-red, high contrast, amber, hot metal, grey
Image and data storage		
Storage medium	2GB SD Card (3000 .bmp IR images/1200 .IS2 IR-Fusion images)	
File formats supported	JPEG, BMP, GIF, PNG, TIFF, WMF EXIF and EMF	
Voice memo recorder		●
Controls and adjustments		
Set-up controls	Date/time,°C/°F, language	Date/time,°C/°F, language, emissivity, hot spot and cold spot on image
Language selection	Eng, ger, fre, spa, por, ita, swe, fin, rus, cze, pol, tur	
Image controls	Smooth auto scaling and manual scaling	
On-screen Indicators	Battery status, real time clock and center point temperature, range and span indication and high and low alarm settings	

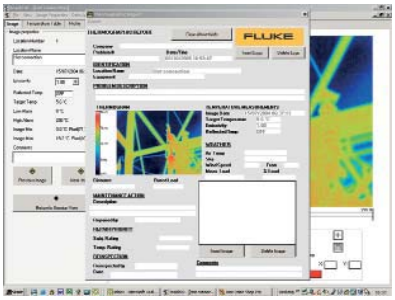
Battery life: 3 to 4 hours continuous operation
Water and dust resistant: IP54
Size (HxWxD): 267 x 127 x 152 mm
Weight: 1.2 kg
Two Years Warranty

Recommended Accessories

Ti-Car Charger

Ti20 Thermal Imager

Fluke Ti20



Quickly and easily create reports with the InsideIR software

Everything needed for fast and easy inspection routing

The Fluke Ti20 Thermal Imager is the ideal tool for fast and easy inspection routing. Plan your equipment inspection route, load it into the imager once and then follow the easy, on-imager location instructions each time you perform inspections.

- 128 x 96 detector provides a clear thermal image with accurate temperature measurements up to 350 °C
- Fully radiometric for detailed temperature analysis and tracking of critical components
- Large color LCD displays uncluttered image with data and routing instructions
- Facilitates one-handed point, shoot and image capture operation
- Assists fast inspections with clear on-screen step-by-step routing instructions
- Protected against dust and moisture (IP54 rated) to withstand harsh industrial environments
- Provides 3 hours continuous operation per battery charge (2 battery packs delivered with the unit)
- Includes InsideIR™ software for unlimited use by every member of the maintenance team (no software license fees)
- Comes complete with all necessary accessories and professional application training material to ensure a fast return on investment

Specifications

(Check the Fluke web for detailed specifications)

Imaging performance	
Field of view (FOV)	20° horizontal x 15° vertical
Spatial resolution (IFOV)	2.73 mrad
Min focus distance	0.15 m
Thermal sensitivity (NETD)	A0.2 °C at 30 °C
Image frequency	9 Hz
Focus	Manual
Detector type	128 x 96 Focal Plane Array, Uncooled Microbolometer
Spectral band	7.5 µm to 14 µm
Temperature measurement	
Calibrated temperature range	-10 °C to 350 °C
Accuracy	±2° C or 2% (whichever is greater)
Measurement modes	Auto and manual level and span adjustment
Emissivity correction	0.1 to 1.0 (0.01 increments)
Image presentation	
Digital display	3" large color LCD
LCD backlight	Selectable On/Off
Palettes	Grey, grey reverse, grey BR, ironbow, rainbow, hot metal, high contrast, blue red, red, amber
Image and data storage	
Storage medium	100 images internal flash
File formats supported	14 bit measurement data included. Exportable JPEG, BMP, GIF, PNG, TIFF, WMF, EXIF, EMF
Interfaces and software	
Interface	USB 2.0 (High speed)
Software	InsideIR; Full analysis and reporting software included
Laser	
Classification	Class II
Controls and adjustments	
Set-up controls	Date/time, temperature units C/F, LCD intensity (high/normal/low),
On-screen Indicators	Battery status, real time clock and center point temperature, range and span indication and high and low alarm settings

Battery life: 3 hours per rechargeable battery (2 included)
Water and dust resistant: IP54
Size (HxWxD): 254 mm x 102 mm x 178 mm
Weight: 1.2 kg
One Year Warranty

Included Accessories

Hard carrying case
Soft-sided carrying case
2 Rechargeable battery packs
1 AA battery case
AC/DC power adapter
USB communication cable
Wrist strap
InsideIR reporting and analysis software
Interactive CD with training materials
Getting Started Guide

Ordering Information

Fluke Ti20 Thermal Imager

Recommended Accessories

Ti-Car Charger

Ti20-Visor
Sun Visor

Ti20-RBP
Rechargeable battery pack

Ti40/Ti50 Series IR FlexCam® Thermal Imagers

FLUKE ®

Fluke Ti40FT, Ti45FT

IR-Fusion™

Fluke Ti50FT, Ti55FT

The experts' choice for problem solving and preventive/predictive maintenance

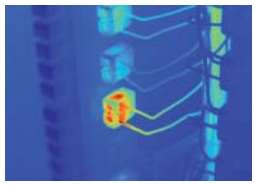
The FlexCam series of thermal imagers is available with different detector sizes, temperature ranges and thermal sensitivities to meet almost every image quality requirement and application.

These high-end thermal imagers are easy to use, and allow the user to confidently apply numerous advanced features that make predicting impending problems faster and easier.

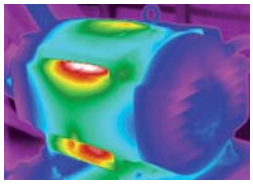
Features

	Ti40FT	Ti45FT	Ti50FT	Ti55FT
180° articulating flexible lens to view images in every situation	●	●	●	●
Choice of 3 interchangeable lenses to cover every application	●	●	●	●
Large 5" high contrast color LCD for a clear picture independent of lighting conditions	●	●	●	●
Fully radiometric for detailed temperature analysis and tracking	●	●	●	●
SmartFocus for best image quality and accurate temperature measurements	●	●	●	●
Windows® CE based menu structure for ease of use	●	●	●	●
Personalized instrument set-up for multiple use	●	●	●	●
CompactFlash memory cards to store over 1000 IR images plus fully radiometric temperature data	●	●	●	●
SmartView reporting and analysis software included	●	●	●	●
AutoCapture for making intermittent problems visible		●		●
On-board analysis functions		●		●
User defined text annotations for simplified reporting		●		●
Built-in visible light (digital) camera	●	●	●	●
IR-Fusion blending thermal and visible light images to easily pinpoint suspect components	●	●	●	●
IR/Visible Alarm		●		●
Laser pointer for easy targeting	●	●	●	●
Flash and torch light for high quality images in dark environments	●	●	●	●

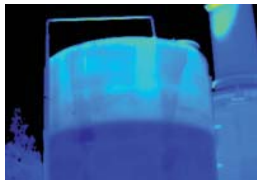
Overheating pole transformer



Overloading lighting control circuit



Abnormal/uneven heating on motor



Tank level too low

Included Accessories

Heavy duty carrying case
2 rechargeable battery packs
Battery charger
AC adapter (for Ti45 and Ti55 only)
Video cable
512 MB compact flash card
Compact flash card reader and USB cable
PCMCIA compact flash card reader
Neck strap
SmartView reporting and analysis software on CD
User manual on CD

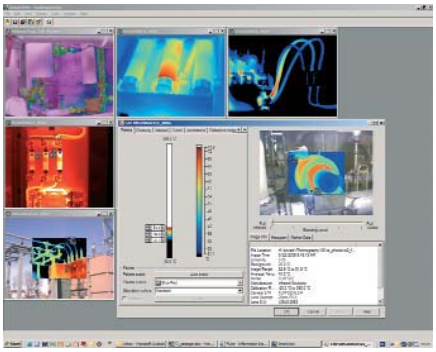
Ordering Information*

Fluke Ti40FT-20	IR FlexCam Thermal Imager with IR-Fusion
Fluke Ti45FT-20	IR FlexCam Thermal Imager with IR-Fusion
Fluke Ti50FT-20	IR FlexCam Thermal Imager with IR-Fusion
Fluke Ti55FT-20	IR FlexCam Thermal Imager with IR-Fusion

*For ordering information of optional lenses check the Fluke web.

Ti40/Ti50 Series IR FlexCam® Thermal Imagers

FLUKE®



SmartView™ Software

Fluke SmartView™ software is included with each Fluke IR FlexCam® Thermal Imager. This powerful software is a modular suite of tools that annotates, views, edits and analyzes IR images. It also generates fully customizable and professional-looking reports in a few easy steps. The IR-Fusion technology is fully supported.

Complete package

The IR FlexCam thermal imagers are delivered as a complete package.

180° articulating lens

Flexcam articulating lens enables you to capture and view images in areas with poor accessibility.

Specifications

(Check the Fluke web for detailed specifications)

	Ti40FT	Ti45FT	Ti50FT	Ti55FT
Thermal Imaging performance				
Field of view (FOV)*	23° horizontal x 17° vertical			
Spatial resolution (IFOV)*	2.60 mrad		1.30 mrad	
Min focus distance*	0.15 m			
Thermal sensitivity (NETD) at 30 °C	≤0.09 °C	≤0.08 °C	≤0.07 °C	≤0.05 °C
Detector data acquisition / Image frequency	30 Hz/30 Hz		60 Hz/60 Hz	
Focus	SmartFocus; one finger continuous focus			
IR digital zoom		2x	2x	2x, 4x. 8x
Detector size	160 x 120		320 x 240	
Detector type	Focal Plane Array, Vanadium Oxide (VOx) Uncooled Microbolometer			
Spectral band	8 µm to 14 µm			
Visual Imaging performance				
On-camera operating modes				
– Picture-in-Picture	●	●	●	●
– Full thermal, full visual light or merged thermal-visual images	●	●	●	●
Visible light camera	1280 x 1024 pixels, full color			
Visible light digital zoom		2x	2x	2x, 4x
Temperature measurement				
Calibrated temperature range	-20 to 350 °C	-20 to 600 °C	-20 to 350 °C	-20 to 600 °C
1200 °C High temperature option		●		
Accuracy	±2°C or 2 % (whichever is greater)			
Measurement modes				
– Centerpoint, center box (area min/max, average)	●	●	●	●
– Moveable spots/boxes		●		●
– Isotherms, automatic hot and cold point detection,		●		●
– Visible color alarm above and below		●		●
Emissivity correction	0.1 to 1.0 (0.01 increments)			
Image presentation				
Digital display	5" large high-resolution backlight LCD			
Video output	RS170 EIA/NTSC or CCIR/PAL composite video			
Palettes	Grayscale, grayscale inverted, blue red, high contrast, hot metal, ironbow, amber, amber inverted			
Optional lenses				
54 mm Telephoto lens	High precision Germanium lens			
Field of view (FOV)	9° horizontal x 6° vertical			
Spatial resolution (IFOV)	0.94 mrad		0.47 mrad	
Min focus distance	0.6 m			
10.5 mm wide angle lens	High precision Germanium lens			
Field of view (FOV)	42° horizontal x 32° vertical			
Spatial resolution (IFOV)	4.9 mrad		2.45 mrad	
Min focus distance	0.3 m			
Image and data storage				
Storage medium	Compact flash card (512Mb) stores over 1000 IR images			
File formats supported	14 bit measurement data included. JPEG, BMP, PNG, GIF, TIFF			
Interfaces and software				
Interface	Compact flash card reader included			
Included software	SmartView; Full analysis and reporting software			
Laser				
Classification	Class II			
Laser targeting	Laser dot visible on blended and visual image			
Controls and adjustments				
Set-up controls	Date/time, °C/°F, language, scale, LCD intensity			
Image controls	Level, span, auto adjust (continuous/manual)			
On-screen indicators	Battery status, emissivity, background temperature and real time clock			

*standard 20 mm Germanium lens

Battery life: 2 hours continuous operation
Water and dust resistant: IP54
Size (HxWxD): 162 mm x 262 mm x 101 mm
Weight: 1.85 kg
Two Years Warranty

Recommended Accessories

103232
Anti-glare Hood

104543
Car charger

Ti-SBC
Battery Charger

TiR Series Thermal Imagers

FLUKE®

New

Fluke TiR/TiR1

IR-Fusion™

Fluke TiR2/FT, TiR3/FT, TiR4/FT

Locate building problems quickly and easily

The affordable rugged Fluke TiR1 and TiR Thermal Imagers are workhorse tools for the demands of building envelope, restoration and remediation, inspection and roofing applications. Whether to locate the origins of construction problems, to find roof leaks or to perform energy audits, the TiR1 and TiR offer an economical solution for complete detection, analysis and documentation.

The TiR2, TiR3 and TiR4 IR Flexcam® Thermal Imagers are the expert's choice for building diagnostics. They feature the highest levels of thermal sensitivity available to identify even small temperature differences that could indicate problems. A 180° articulating lens makes it possible to view and capture images in areas with poor accessibility. Built-in AutoCapture, alarm and analysis functions help you locate intermittent problems (TiR2 and TiR4 only).

Specifications

(Check the Fluke web for detailed specifications)

	TiR	TiR1	TiR2	TiR3	TiR4
Detector type	160 x 120	160 x 120	160 x 120	320 x 240	320 x 240
Field of View (FOV)	23° x 17°	23° x 17°	23° x 17°	23° x 17°	23° x 17°
Optional 10.5 mm lens			●	●	●
180° articulating lens			●	●	●
Spatial resolution (IFOV)	2.5 mrad	2.5 mrad	2.6 mrad	1.3 mrad	1.3 mrad
Thermal sensitivity (NETD)	A 0.2 °C	A 0.1 °C	A 0.07 °C	A 0.07 °C	A 0.05 °C
Temperature range	-20 to 100 °C	-20 to 100 °C	-20 to 100 °C	-20 to 100 °C	-20 to 100 °C
Digital display	3.6" LCD	3.6" LCD	5" LCD	5" LCD	5" LCD
Video output			●	●	●
Choice of palettes	4	6	8	8	8
IR-Fusion	●	●	●	●	●
Fully radiometric	●	●	●	●	●
Voice annotation		●			
SmartView Software	●	●	●	●	●
Storage medium	>3000 IR images on SD card	>3000 IR images on SD card	>1000 IR images on compact flash card	>1000 IR images on compact flash card	>1000 IR images on compact flash card

TiR/TiR1
Battery life: 3 to 4 hours continuous use
Water and dust resistant: IP54
Size (HxWxD): 162 x 262 x 101 mm
Weight: 1.85 kg
Two Years Warranty

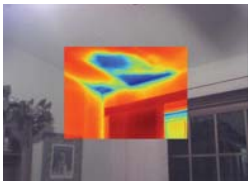
TiR2/TiR3/TiR4
Battery life: 2 hours continuous use
Water and dust resistant: IP54
Size (HxWxD): 267 x 127 x 152 mm
Weight: 1.2 kg
Two Years Warranty

Included Accessories

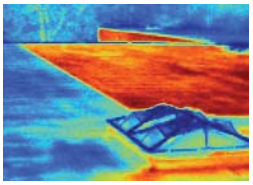
Fluke TiR/TiR1: SmartView software, 2 GB SD card, SD card reader, rugged hard carrying case, soft carrying case, hand strap, rechargeable battery, AC charger/power supply, user manual
Fluke TiR2/TiR3/TiR4: SmartView software, AC adapter (TiR2 and TiR4), video cable, 512 MB compact flash card, compact flash card reader and USB cable, PCMCIA compact flash card adapter, 2 rechargeable battery packs, battery charger, neck strap, heady duty carrying case, user manual on CD

Ordering Information

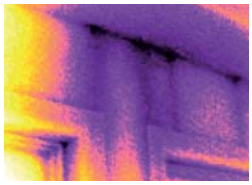
Fluke TiR	Thermal Imager
Fluke TiR1	Thermal Imager
Fluke TiR2/FT-20	IR FlexCam Thermal Imager
Fluke TiR3/FT-20	IR FlexCam Thermal Imager
Fluke TiR4/FT-20	IR FlexCam Thermal Imager



Missing insulation: Quickly locate voids in building insulation.



Roofing: Detect water saturated insulation in flat-roof systems to locate damaged portions of roofing structure.



Moisture detection: Accurately detect moisture behind interior walls, in ceilings, and under carpets.

Recommended Accessories

103232
Anti-glare Hood (TiR2/3/4)

104543
Car charger (TiR2/3/4)

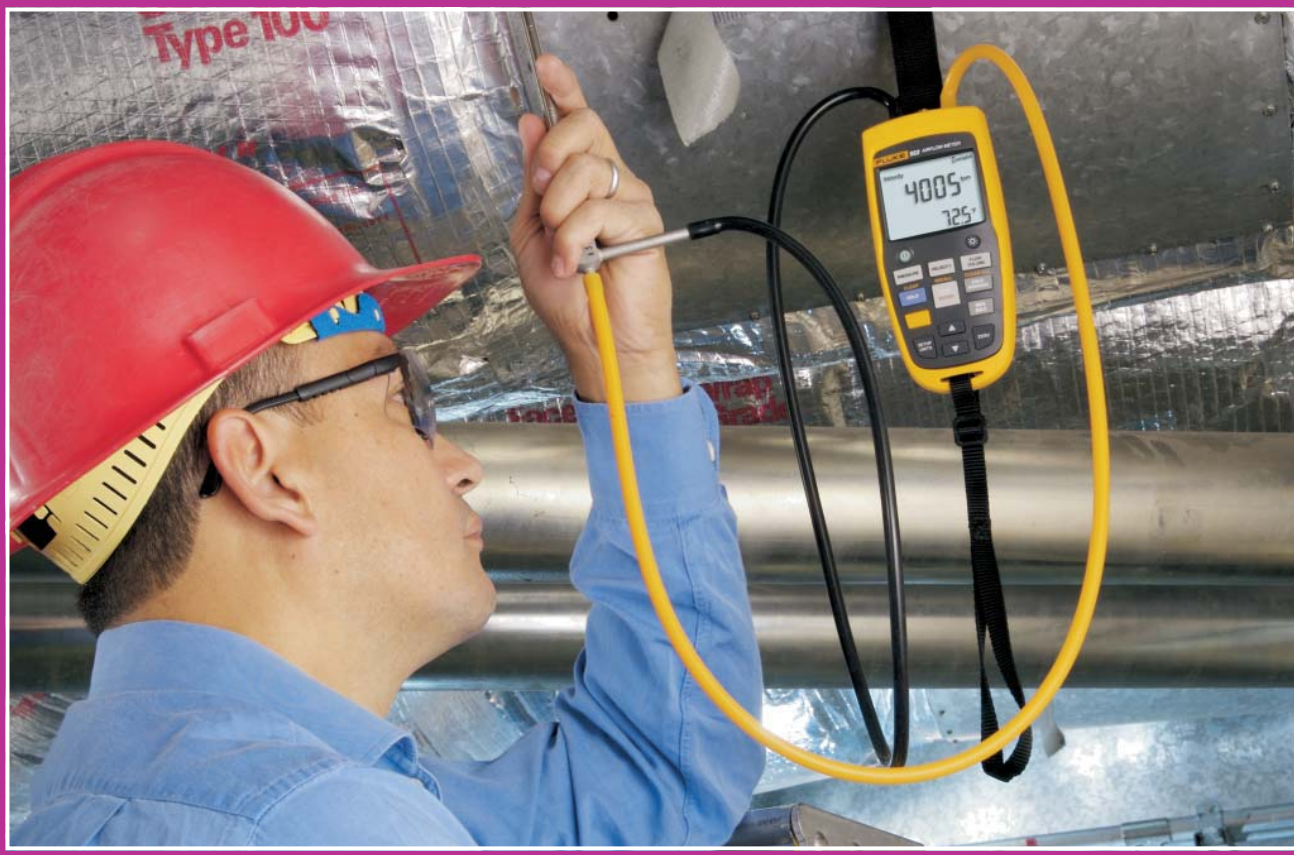
Ti-SBC
Battery Charger (TiR2/3/4)

Ti-SBP
Rechargeable Battery Pack (TIR2/3/4)

Ti--Car Charger

Indoor Air Quality Tools

In response to the growing importance of air quality in buildings, workplaces and homes, Fluke offers you a range of tools that monitor temperature, humidity, air velocity, particulate, and carbon monoxide levels. These tools help you to quickly and easily troubleshoot and maintain indoor air quality, as well as to verify the efficient operation of heating, ventilation and air conditioning systems.



975 AirMeter

FLUKE ®

Fluke 975

Combined inspection tool for complete air quality inspections

The Fluke 975 AirMeter combines five air monitoring tools into one, rugged and easy-to-use handheld tool. Use the Fluke 975 to verify the efficient operation of heating, ventilation and air conditioning systems, and test for dangerous carbon monoxide leaks in all types of buildings.

- Simultaneously measures, logs, and displays temperature, humidity, CO_2, and CO on a bright, backlit LCD display
- One-touch air flow and velocity measurements with available probe
- Min/Max/Average on all measured and calculated readings
- Audible and visual threshold alarms
- Multi-language user interface
- Extensive discrete or continuous data logging capacity, down-loadable to PC via USB interface

Specifications

(Check the Fluke web for detailed specifications)

Feature	Range	Display resolution	Accuracy
Measured specifications			
Temperature	-20 °C to 60 °C	0.1 °C	± 0.9 °C from 40 °C to 60 °C ± 0.5 °C from 5 °C to 40 °C ± 1.1 °C from -20 °C to 5 °C
Relative humidity	10 % to 90 % RH non-condensing	1 %	± 2 % RH (10 % RH to 90 % RH)
Air velocity	50 fpm to 3000 fpm 0.25 m/sec to 15 m/sec	1 fpm 0.005m/sec	4 % or 4 fpm* 3 % or 0.015 m/sec* whichever is greater *Accuracy specification only valid for velocity readings above 50 fpm.
CO_2	0 to 5000 ppm	1 ppm	Warm up time 1 min (5 minutes for full specification) 2.75 % + 75 ppm
CO	0 to 500 ppm	1 ppm	± 5 % or ± 3 ppm, whichever is greater, @ 20 °C and 50 % RH
Calculated specifications			
Dew point temperature	-44 °C to 57 °C	0.1 °C	± 1 °C when temp: -20 °C to 60 °C RH: 40 % to 90 % ± 2 °C when temp: -20 °C to 60 °C RH: 20 % to 40 % ± 4 °C when RH: 10 % to 20 %
Wet bulb temperature	-16 °C to 57 °C	0.1 °C	± 1.2 °C when RH: 20 % to 90 % temp: -20 °C to 60 °C ± 2.1 °C when RH: 10 % to 20 %
Volume flow rate (in a duct)	0 to 3,965 M^3/m (0 to 140,000 cfm)	0.001 M^3/min (1 cfm)	N/A: The volume flow calculation will be a simple average of the data points times the duct area
% outside air (based on temperature)	0 to 100 %	0.1 %	N/A
% outside air (based on CO_2)	0 to 100 %	0.1 %	N/A

Operating temperature
(CO and CO_2 sensors): -20 °C to 50 °C
Operating temperature
(all other functions): -20 °C to 60 °C
Storage temperature: -20 °C to 60 °C
Humidity: 10% to 90%
Altitude: Up to 2000 m

Shock and vibration: MIL-PRF-28800F, Class 2
Battery: Rechargeable Li-Ion (primary), three-AA (backup)
Weight: 0.544 kg
Size (HxWxD): 28.7 cm x 11.43 cm x 5.08 cm
Data logging: 25,000 records (continuous), 99 records (discrete)
Multilanguage interface: English, French, Spanish, Portuguese and German
Two-year warranty

Included Accessories

A4 alkaline batteries (3), Users Manual, Calibration Cap, FlukeView Forms Software, Power Adapter, International Power Plugs, Air Velocity Probe (Fluke 975V only)

Ordering Information

Fluke 975	AirMeter
Fluke 975V	AirMeter with Velocity
975CK	Airmeter Calibration Kit
975R	Regulator
975VP	Air Velocity Probe

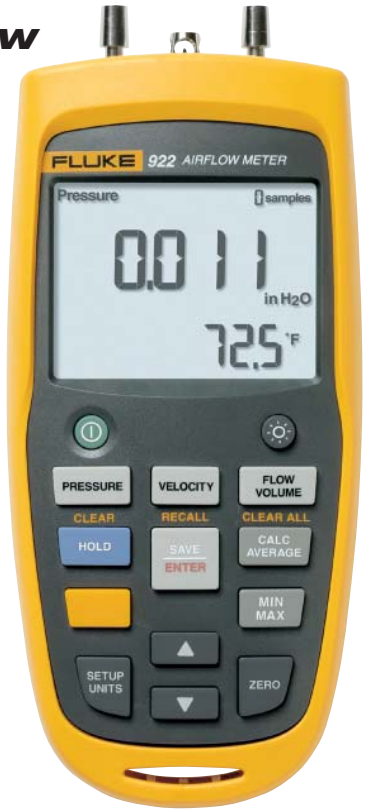
Recommended Accessories

975VP
AirMeter Velocity Probe

922 Airflow Meter

FLUKE®

New



Fluke 922

Measures pressure, air flow and velocity for maintaining balanced and comfortable ventilation

The Fluke 922 makes airflow measurements easy by combining pressure, air flow, and velocity into a single, rugged meter. Compatible with most Pitot tubes, the Fluke 922 allows technicians to conveniently enter their duct shape and dimensions for maximum measurement accuracy.

Use the Fluke 922 to: Ensure proper air flow balance and maintain a comfortable environment; measure pressure drops across filters and coils; match ventilation to occupant loads; monitor indoor vs. outdoor pressure relationships and manage the building envelope; and perform duct traversals for accurate airflow readings.

- Provides differential and static pressure, air velocity and flow readings
- Convenient colored hoses help you properly diagnose pressure readings
- Bright, backlit display for clear viewing in all environments
- Min/Max/Average/Hold functions for easy data analysis
- Auto power off saves battery life

Specifications

(Check the Fluke web for detailed specifications)

Feature	Range	Resolution	Accuracy
Operating Specifications			
Air Pressure	± 4000 Pascals ± 16 in H_2O ± 400 mm H_2O ± 40 mbar ± 0.6 PSI	1 Pascal 0.001 in H_2O 0.1 mm H_2O 0.01 mbar 0.0001 PSI	± 1 % + 1 Pascal ± 1 % + 0.01 in H_2O ± 1 % + 0.1 mm H_2O ± 1 % + 0.01 mbar ± 1 % + 0.0001 PSI
Air Velocity	250 to 16,000 fpm 1 to 80 m/s	1 fpm 0.001 m/s	± 2.5 % of reading at 10 m/s (2000 p/min)
Air Flow (Volume)	0 to 99,999 cfm 0 to 99,999 m^3/hr 0 to 99,999 l/s	1 cfm 1 m^3/hr 1 l/s	Accuracy is a function of velocity and duct size
Temperature	0 °C to 50 °C	0.1°C	± 1 % + 2 °C

General Specifications

General Specifications	
Operating Temperature	0 °C to +50 °C
Storage Temperature	-40 °C to +60 °C
Operating Relative Humidity	Non condensing (< 10 °C) 90 % RH (10 °C to 30 °C) 75 % RH (30 °C to 40 °C) 45 % RH (40 °C to 50 °C) Without Condensation
IP Rating	IP40
Operating Altitude	2000 m
Storage Altitude	12000 m
EMI, RFI, EMC	Meets requirements for EN61326-1
Vibration	MIL-PREF-28800F, Class 3
Max Pressure at Each Port	10 PSI

Data Storage: 99 readings
Size (HxWxD): 175 x 775 x 419 mm
Weight: 0.64 kg
Battery: Four AA batteries
Battery Life: 375 hours without backlight, 80 hours with backlight
Two Year Warranty

Fluke 922/Kit

Included Accessories

Fluke 922: Two Rubber Hoses, Wrist Strap, Four AA Batteries 1.5 V Alkaline, Users Manual and Soft Carrying Case
Fluke 922 Kit Includes: Fluke 922 Airflow Meter, 30.48 cm Pitot tube, ToolPak, Two Rubber Hoses, Wrist Strap, Four AA Batteries 1.5 V Alkaline, Users Manual and Hard Carrying Case

Ordering Information

Fluke 922	Air Flow Meter
Fluke 922/Kit	Airflow Meter with 30.48 cm Pitot Tube

Recommended Accessories

PT12
Pitot Tube, 30.48 cm

TPAK
Toolpak
See page 109

971 Temperature Humidity Meter
Carbon Monoxide Meters

FLUKE®

Fluke 971

Fluke 971
Temperature Humidity Meter

Quickly take accurate humidity and temperature readings in the air. Temperature and humidity are two important factors in maintaining optimal comfort levels and good indoor air quality. The Fluke 971 is invaluable for facility maintenance and utility technicians, HVAC-service contractors, and specialists who assess indoor air quality (IAQ). Lightweight, rugged, and easy to hold, the Fluke 971 is the perfect tool for monitoring problem areas.

- Simultaneously measures humidity and temperature
- Measures dew point and wet bulb
- 99 record storage capacity
- Min/Max/Avg Data Hold
- Ergonomic design with built-in belt clip and protective holster
- Backlit, dual readings display
- Twist-open protective cap
- Low battery indicator

Specifications

Temperature range	-20 °C to 60 °C
Temperature accuracy	
0 °C to 45 °C	± 0.5 °C
-20 °C to 0 °C and 45 °C to 60 °C	± 1.0 °C
Resolution	0.1 °C
Response time (temperature)	500 ms
Temperature sensor type	NTC
Relative humidity range	5% to 95% R.H.
Relative humidity accuracy	
10 % to 90 % R.H. @ 23 °C	± 2.5 % R.H.
<10 %, > 90 % R.H. @ 23 °C	± 5.0 % R.H.
Humidity sensor	Electronic capacitance polymer film sensor
Data storage	99 points
Response time (humidity)	For 90% of total range – 60 sec with 1 m/s air movement

Operating temperature:
Temperature: -20 °C to 60 °C
Humidity: 0 °C to 60 °C
Storage temperature: : -20 °C to 55 °C
Battery life: 4 AAA alkaline, 200 hours

Safety: Complies with EN61326-1
Weight: 0.188 kg
Size (HxWxD): 194 mm x 60 mm x 34 mm
One Year Warranty

Other useful tools

Fluke 561
Combined Contact and Non-contact Thermometer
See page 50.

Fluke 902
True RMS Clamp Meter with Temperature Measurement
See page 22.

Included Accessories

Fluke CO-220: C50 soft carrying case and battery
Fluke CO-210: C50 soft carrying case, battery and cord to plug into a digital multimeter

Ordering Information

Fluke 971	Temperature Humidity Meter
Fluke CO-220	Carbon Monoxide Meter
CO-205	Aspirator Kit
CO-210	Carbon Monoxide Probe

Carbon Monoxide Meters

CO-220 Carbon Monoxide Meter

The CO-220 Carbon Monoxide Meter makes it easy to take quick and accurate measurements of CO levels. A large, backlit LCD display shows CO levels from 0 to 1000 PPM. The MAX Hold function stores and displays the maximum CO level.
1 year warranty.

Fluke CO-220

CO-210 Carbon Monoxide Probe

As an accessory to a digital multimeter with dc mV inputs, the Fluke CO-210 displays CO levels from 0 to 1000 PPM. As a standalone device, the LED indicator and beeper trigger with increasing frequency as the CO level rises.
1 year warranty.

Fluke CO-210

CO-205 Aspirator Kit

Allows flue gas samples up to 371°C to be drawn with the CO-210 or CO-220 for carbon monoxide measurement.
1 year warranty.

Fluke CO-205

983 Particle Counter

Fluke 983

Easy to use tool for troubleshooting and maintaining indoor air quality

The Fluke 983 Particle Counter simultaneously measures and displays six channels of particle size distribution, temperature and humidity. This compact, lightweight, self-contained tool allows for one-handed operation. As the Fluke 983 doesn't require level holding, it can make accurate measurements in any position. The 8 hour rechargeable battery together with a large 5000 sample record allows for complete air quality surveys in one go. The Fluke 983 is the ideal tool for determining size distribution of airborne particles or tracking down a particle source.

- Simultaneously measure and display 6 channels of particle sizes, temperature and humidity
- Measure particle size down to 0.3 µm
- Selectable sample time, count data, programmable delay
- Store 5000 records of date, time, counts, relative humidity, temperature, sample volumes, alarms and location label
- Upload stored data to a PC with included software
- Compact, self-contained package allows for one-handed operation
- Intuitive, easy to use user interface
- Always ready to run, with no fluids to refill
- Backlit LCD for use in any lighting condition
- 8 hour rechargeable NiMH battery
- Protective holster

Specifications

6 size channels	0.3, 0.5, 1.0, 2.0, 5.0, 10.0 µm
Flow rate	0.1 cfm (2.83 L/min) controlled by internal pump
Count modes	Concentration, totalize, audio
Counting efficiency	50 % @ 0.3 µm; 100 % for particles > 0.45 µm (per JIS B9921:1997)
Zero count	1 count/5 minute (per JIS B9921:1997)
Coincidence loss	5 % at 56,000 particles per m^3
Relative humidity	± 7 %, 20 % to 90 %, non-condensing
Temperature	± 3 °C, 10 °C to 40 °C
Data storage	5000 sample records (rotating buffer) of date, time, counts, relative humidity, temperature, sample volumes, alarms, label
Alarms	Counts, low battery, sensor fail
Delay time	0 to 24 hours
Sample inlet	Isokinetic probe
Interface	RS-232 and RS-485 via RJ-45
Calibration	PSL particles in air (NIST traceable)

Operating temperature: 10 °C to 40 °C, 20 % to 90 % relative humidity, non-condensing
Storage temperature: -10 °C to 50 °C, up to 90 % relative humidity, non-condensing
Power: AC adapter, 90 to 250 V AC, 50 to 60 Hz
Battery life/recharge time: 8 hours/2 hours
Rechargeable battery: NiMH, 4.8V at 4.5 Ah; replaceable
Size (HxWxD): 209 mm x 114 mm x 57 mm
Weight: 1 kg
Warranty: 1 year

Included Accessories

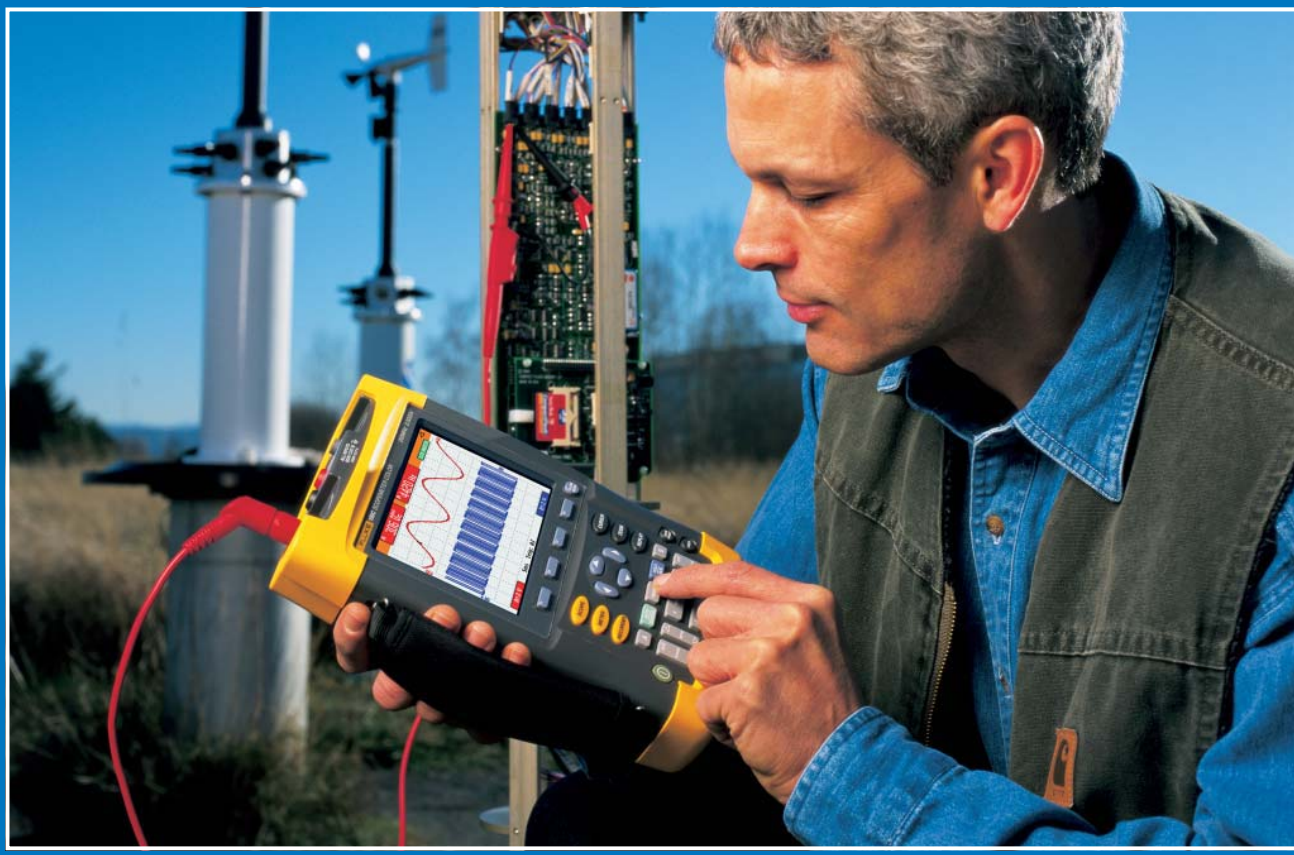
Certificate of Calibration (NIST)
Isokinetic probe
Zero count filter
Windows-compatible software download utility
DB9 to RS-232 adapter and cable
High purity tubing
1/8 in. hose barb adapter
Power supply
Operation manual
Hard molded carrying case

Ordering Information

Fluke 983 Particle Counter

ScopeMeter® Test Tools

With the original ScopeMeter, we transformed the oscilloscope category beyond recognition, and we still lead the way today. From rugged solutions for industrial applications to full-colour models that pack top-end bench oscilloscope specifications into hand-held, battery powered instruments. In short, ScopeMeter provides you with unmatched speed, performance and analysis power while working on site.



ScopeMeter® Test Tools

FLUKE®

Oscilloscopes for field applications

The ScopeMeter 190 Series of high-end performance oscilloscopes have bandwidth of 60, 100 and 200 MHz and sample rates up to 2.5 GS/s. The 190C Series adds a high-resolution color display that has a fast update rate, waveform pass/fail testing and a digital persistence mode – making the analysis of complex and dynamic signals much easier.

For industrial electronic or electro mechanical applications, the 120 Series Industrial ScopeMeter, with a 20 or 40 MHz bandwidth and Connect-and-View™ triggering for an instant, stable display will get the job done.

Features

	199C	196C	199B	196B	192B	125	124	123
Oscilloscope Features								
LCD Display	Color		B/W			B/W		
Persistence	Digital		●	●	●			
Waveform reference	●	●	●	●	●			
Automatic pass fail testing	●	●						
Cursors and zoom	●	●	●	●	●	Cursors	Cursors	
Connect-and-View Triggering	●	●	●	●	●	●	●	●
Video triggering with line count	●	●	●	●	●	●	●	●
Selectable pulse width triggering	●	●	●	●	●			
Capture and replay of last 100 screens	●	●	●	●	●			
Dual Input TrendPlot	With cursors and zoom					●	●	●
Memory for screens and setups	10 screens and setups					20	20	10
Recorder memories, each can store 100 scope screens, a ScopeRecord or a TrendPlot	2 recorder memories							
1000V Independently floating isolated inputs	●	●	●	●	●			
Meter measurements: VAC RMS, VAC+DC, VDC, Ohms, Continuity, Diode, Amps, Temp. (°C, °F)	●	●	●	●	●	●	●	●
Waveform mathematics: A + B, A – B, A x B, A versus B (X-Y-mode)	●	●	●	●	●			
Frequency Spectrum Analysis using FFT	●	●						
Power measurements and V_{pwm}	●	●	●	●	●	●		
Capacitance and frequency measurements	-/●	-/●	-/●	-/●	-/●	●/●	●/●	●/●
Bus Health Test function						●		
Rugged, Dust and drip proof case.	●	●	●	●	●	●	●	●
PC and Printer Interface via optically isolated RS-232/USB cable	1)	1)	1)	1)	1)	1)	1)	1)
FlukeView® for Windows® Software (SW90W)	1)	1)	1)	1)	1)	1)	1)	1)

● Standard equipped 1) Optional

Specifications

(Check the Fluke web for detailed specifications)

	199C	196C	199B	196B	192B	125	124	123
Oscilloscope Specifications								
Bandwidth	200 MHz	100 MHz	200 MHz	100 MHz	60 MHz	40 MHz		20 MHz
Maximum real time sample rate	2.5 GS/s	1 GS/s	2.5 GS/s	1 GS/s	500 MS/s	25 MS/s		
Input sensitivity	2 mV to 100 V/div		5 mV to 100 V/div			5 mV-500 V/div		
Timebase range	5 ns/div to 2 min/div				10 ns/div to 2 min/div	10 ns/div to 1 min/div		20 ns/div to 1 min/div
Inputs and digitizers	2 plus external trigger/DMM input					2		
Independently floating isolated inputs	Up to 1000 V between inputs, references and ground							
Max. record length … in Scope mode: … in ScopeRecord mode:	3.000 points per input 27.500 points per input or more (5 ms/div…2 min/div.)					512 min/max points per input		
Glitch capture	Up to 3 ns using Pulse Width triggering; 50 ns peak detect at 5 µs/div. to 1 min/div.					40 nsec		
Scope measurements	7 cursor+30 automatic, incl. power and V_{pwm}					cursors + 26 automatic		26 automatic
						plus power measure-ments and V_{pwm}		
True RMS multimeter	5000 counts, single input					5000 counts, dual input		
General Specifications								
Line Power	Adapter/Battery charger included							
Battery power	4 hours NiMH					7 hours NiMH		
Size	256 x 169 x 64 mm					232 x 115 x 50 mm		
Weight	2 kg					1.2 kg		
Safety certified (EN61010-1)	1000 V CAT II/600 V CAT III					600 V CAT III		
Warranty	3 years					3 years		

Check the Fluke web site for Technical Specifications and Application Notes for the Fluke ScopeMeters

ScopeMeter® 190 Series

FLUKE ®

Fluke 199C

Fluke 196C

Fluke 199B

Fluke 196B

Fluke 192B

Speed, performance and analysis power

For more demanding applications, the ScopeMeter 190 Series high performance oscilloscopes offer specifications usually found on top-end bench instruments. With up to 200 MHz bandwidth, 2.5 GS/s real-time sampling and a deep memory of 27500 points per input they're ideal for engineers who need the full capabilities of a high performance oscilloscope in a handheld, battery powered instrument.

- Dual input – 60, 100 or 200 MHz models
- Up to 2.5 GS/s real time sampling per input
- Choice between a high resolution Color or Black and White display
- See even more detail than before. The Fluke ScopeMeter 190 family is now twice as fast with >100/second trace updates rates.
- High waveform resolution of max. 3000 datapoints per channel
- Digital Persistence for analyzing complex dynamic waveforms like on an analog scope (190C Series only)
- Fast display update rate for seeing dynamic behavior instantaneously
- Connect&View™ automatic triggering, a full range of manual triggering modes plus external triggering.
- Automatic capture and replay of 100 screens
- 27500 points per input record length using ScopeRecord mode
- Up to 1000 V independently floating isolated inputs
- Waveform reference for visual comparisons and automatic pass/fail testing of waveforms (190C Series only)
- V_{pwm} function for motor drive and frequency inverter applications.
- Waveform mathematics: Add, Subtract and Multiply
- Frequency Spectrum Analysis using FFT (190C)
- Cursors, zoom and real-time clock
- 30 automatic waveform measurements
- Four hours rechargeable Ni-MH battery pack
- Includes a 5000 count true-RMS multimeter and a TrendPlot™ paperless recorder

ScopeMeter for medical applications

The ScopeMeter 190 Series is also available optimized for measurements on medical imaging equipment and video display systems. For more information please visit the Fluke web site.

Automatic capture and replay of 100 screens

Scope users know how frustrating it is to see a one time anomaly flash by never to be seen again. Not with the ScopeMeter 190 Series! Now you can look back in time with a touch of the replay button. In normal use, the instrument continuously memorizes the last 100 screens. Each time a new screen is acquired, the oldest is discarded. At any moment you can "freeze" the last 100 screens and scroll through picture-by-picture or replay as a 'live' animation. Cursors can be used for further analysis. You can even use the advanced trigger capabilities to capture up to 100 specific events. Two sets of 100 captured screens with individual time stamps can be stored for later recall or download to a PC.

LISTED UL CSA True RMS

600V CAT III
On all inputs

ScopeMeter® 190 Series

FLUKE®

See dynamic signal behavior instantaneously

The Digital Persistence mode helps to find anomalies and to analyze complex dynamic signals by showing the waveforms amplitude distribution over time using multiple intensity levels and user selectable decay time – it's as if you're looking at the display of an analog, real time oscilloscope! A fast display update rate reveals signal changes instantaneously, useful for instance when making adjustments to a system under test.

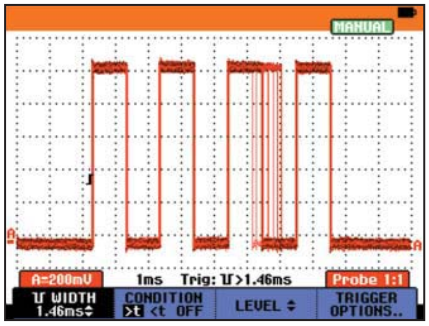
Frequency Spectrum Analysis 190C

All 190C Color ScopeMeters include Frequency Spectrum Analysis on Fast Fourier Transformation (FFT) analysis as a standard feature.
This makes it possible to identify the individual frequency components contained in a signal. The spectrum analysis function is also handy to reveal the effects of vibration, signal interference or crosstalk. An automatic window function assures optimal windowing, although you may manually select your preferred time window.

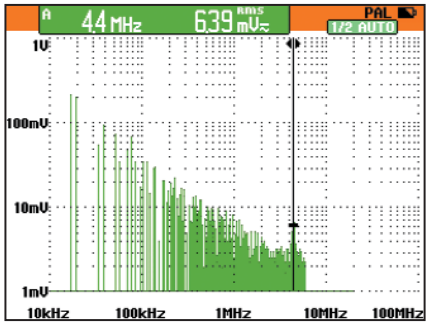
FlukeView® Software for documenting, archiving and analysis

FlukeView® for Windows® helps you get more out of your ScopeMeter by:

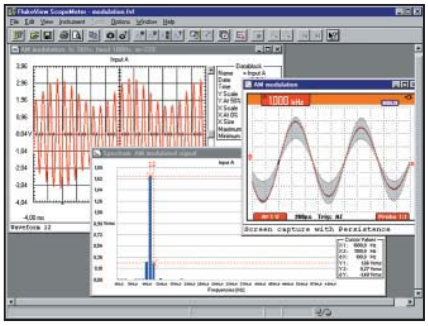
- Documenting – transfer waveforms, screens and measurement data from the ScopeMeter to a PC. Print or import the data into your report
- Archiving – create a library of waveforms with your comments for easy reference and comparison
- Analysis – use cursors, perform spectrum analysis or export data to other analysis programs



Pulse width fluctuations are clearly visible using Digital Persistence



Frequency Spectrum shows an overview of frequencies contained in a signal.



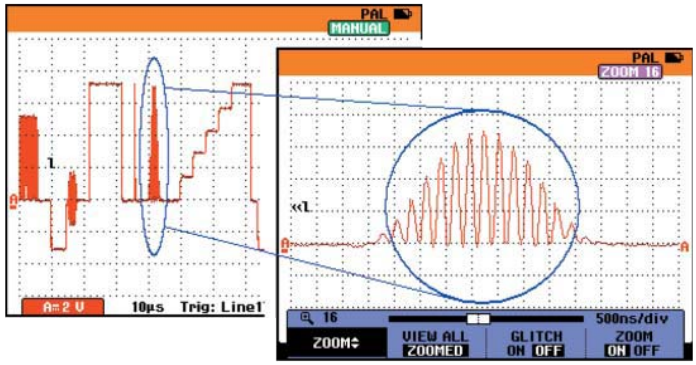
FlukeView Screen

Included Accessories

BC190 Battery Charger
BP190 NiMH Battery Pack
VPS210-G + VPS210-R Voltage Probe
TL75 Hard Point Test Lead Set
user's manual (CD-Rom), Getting Started Booklet

Ordering Information

Fluke 192B	ScopeMeter (60MHz, 500 MS/s)
Fluke 196B	ScopeMeter (100 MHz, 1 GS/s))
Fluke 199B	ScopeMeter (200 MHz, 2.5 Gs/s)
Fluke 196C	Color ScopeMeter (100 MHz, 1 GS/s)
Fluke 199C	Color ScopeMeter (200 MHz, 2.5 GS/s)
Fluke 192B/S	192B + SCC 190 kit option
Fluke 196B/S	196B + SCC 190 kit option
Fluke 199B/S	199B + SCC 190 kit option
Fluke 196C/S	196C + SCC 190 kit option
Fluke 199C/S	199C + SCC 190 kit option
SCC190	FlukeView Software, OC4USB cable, carrying case for Fluke 190B and 190C Series
SW90W	FlukeView Software



Thanks to the deep memory, very small parts of the waveform can be studied in full detail using "zoom".

See page 65 for specifications.

Recommended Accessories

SCC190

C195
See page 106

OC4USB
See page 69

i400s
See page 102

SCC198
See page 108

ScopeMeter® 120 Series

FLUKE®

New

Fluke 125

Fluke 124

Fluke 123

600V CAT III
On all inputs

True RMS

Included Accessories

PM 8907 line adapter/charger, STL120 shielded test leads set (1 red, 1 grey), AC120 Alligator Clips, HC120 Hook Clips, BB120 shielded BNC adapter, BP120MH NiMH battery pack, VPS40 wide bandwidth Voltage Probe (Fluke 124/125), TL75 hard point test lead, i400s current clamp (Fluke 125), Getting Started booklet, user's manual (cd-rom)

Ordering Information

Fluke 123	Industrial ScopeMeter® (20MHz)
Fluke 123/S	Industrial ScopeMeter® (20MHz) + SCC120 kit
Fluke 124	Industrial ScopeMeter® (40MHz)
Fluke 124/S	Industrial ScopeMeter® (40MHz) + SCC120 kit
Fluke 125	Industrial ScopeMeter (40 MHz)
Fluke 125/S	Industrial ScopeMeter (40 MHz) + SCC120 kit
SCC120	FlukeView® Software + OC4USB Cable + Carrying Case
OC4USB	USB Interface Cable
PM9080	RS-232 Interface Cable
DP120	Differential Voltage Probe
ITP120	Isolated Trigger Probe
SW90W	FlukeView Software

Three-in-one simplicity

The compact ScopeMeter 120 Series is the rugged solution for industrial troubleshooting and installation applications. It's a truly integrated test tool, with oscilloscope, multimeter and "paperless" recorder in one affordable, easy-to-use instrument. Find fast answers to problems in machinery, instrumentation, control and power systems.

- Dual-input 40 MHz or 20 MHz digital oscilloscope
- Two 5,000 counts true-RMS digital multimeters
- A dual-input TrendPlot™ recorder
- Bus Health Test for industrial bus systems (Fluke 125)
- Connect-and-View™ trigger simplicity for hands-off operation
- Power Measurements and Harmonics measurement (Fluke 125)
- Shielded test leads for oscilloscope, resistance and continuity measurements
- Up to 7 hours battery operation
- 600 V CAT III safety certified
- Optically isolated interface for PC and Printer connection (optional)
- Rugged, compact case

Connect-and-View™ triggering for an instant, stable display

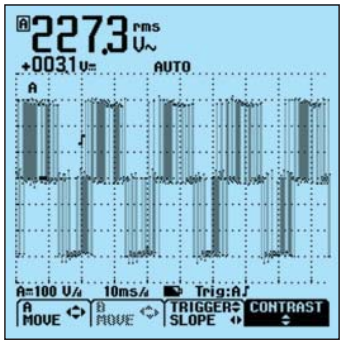
Scope users know how difficult triggering can be. Wrong settings show unstable and sometimes wrong results. Fluke's unique Connect-and-View recognizes signal patterns, and automatically sets up correct triggering. It provides a stable, reliable and repeatable display of virtually any signal – including motordrive and control signals – without touching a button. Signal changes are instantly recognized and settings adjusted for – once again – a stable display.

Use TrendPlot™ to help find intermittents fast

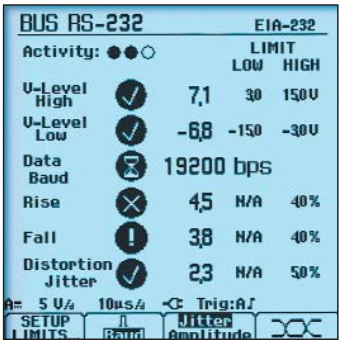
The toughest faults to find are those that happen only once in a while: intermittents. They can be caused by bad connections, dust, dirt, corrosion or simply broken wiring or connectors. You may not be around to see it – your Fluke ScopeMeter will. In this "paperless recorder" mode, you can plot the minimum and maximum peak values and average over time – up to 22 days (Fluke 190 Series) or 16 days (Fluke 120 Series).

Bus Health mode (Fluke 125)

Bus Health mode gives a clear "Good/Bad" indication for the electrical signals on industrial buses and networks, such as CAN-bus, Profi-bus, RS-232 and many more. The Fluke 125 validates the quality of the electrical signals as soon as any electrical signals are passed along the network.



Connect-and-View captures even the most complex motor drive signals.



Bus Health mode allows for an analysis of the signal quality on an industrial network.

See page 65 for specifications.

Recommended Accessories

SCC120

C125
See page 94

DP120
See page 69

OC4USB
See page 69

SCC128
See page 69

ScopeMeter® Accessories

FLUKE®

ScopeMeter probes

VPS40

VPS100/200 series

VPS210-R series

VPS210-G series

DP120

	VPS40	VPS200-R	VPS200-G	VPS201	VPS100-R	VPS100	VPS250	VPS121	DP120	PM8918/301
Description	Voltage Probe Set	Voltage Probe Set	Voltage Probe Set	Voltage Probe Set	Voltage Probe Set	Voltage Probe Set	Voltage Probe Set	Voltage Probe	Differential Probe Set	Low Pass Filter Probe
Number and Color	One Black	One Red	One Grey	Red & Grey	One Red	Red & Grey	Red & Grey	One Black	Red & Grey	One Blue
Attenuation	10:1	10:1	10:1	100:1	10:1	10:1	10:1	1:1	200:1, 20:1	10:1
Band Width DC-MHz	40	200	200	200	100	100	75	12	20	4 kHz
Length [m]	1.2	1.2	1.2	1.2	1.2	1.2	2.5	1.2	1.5	2.5
EN 61010-2 CAT II	1000 V	1000 V	1000 V	1000 V	1000 V	1000 V	1000 V	-	1000 V	-
EN 61010-2 CAT III	600 V	600 V	600 V	600 V	600 V	600 V	600 V	300 V	600 V	600 V
ScopeMeter 190 Series		●	●	●	●	●	●	●	●	●
ScopeMeter 120 Series	●						●	●1)	●1)	●1)

1) Using BB 120

	VPS210-R	VPS210-G	VPS212-R	VPS212-G	VPS220-R	VPS220-G	VPS201
Description	Voltage Probe Set		Voltage Probe Set		Voltage Probe Set		Voltage Probe Set
Number and color	1 Red	1 Grey	1 Red	1 Grey	1 Red	1 Grey	1 Black
Attenuation	10:1		10:1		100:1		1:1
Bandwidth DC...MHz	200 MHz		200 MHz		200 MHz		30 MHz
Length (m)	1.2 m		2.5 m		1.2 m		1.2 m
EN 61010-2 CAT II	1000 V		1000 V		1000 V		-
EN 61010-2 CAT III	600 V		600 V		600 V		300 V
ScopeMeter 190 Series	●	●	●	●	●	●	●
ScopeMeter 120 Series			●	●			

PM9091/9092

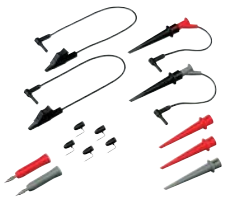
PM9081

PM9082

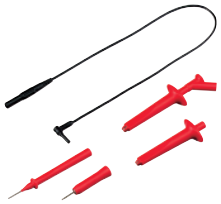
PM9093

	PM9091	PM9092	PM9081	PM9082	PM9093
Description	50 K BNC cable set (1Red, 1Grey, 1Black)	50 K BNC cable set (1Red, 1Grey, 1Black)	Dual Banana plug male to female BNC	Dual Banana jack male to female BNC	Male BNC to dual female BNC
Length	1.5 m	0.5 m			
EN 61010-2 CAT III	300 V	300 V	300 V	300 V	300 V
ScopeMeter 190 Series	●	●	●	●	●
ScopeMeter 120 Series	●1)	●1)	●	●1)	●1)

1) Using BB 120



RS200



AS200-R

OC4USB

PM9080

PM9090

RS200	Probe Replacement Set for VPS Series Probes
AS200-R	Probe Accessory Set, Red for VPS Series Probes
AS200-G	Probe Accessory Set, Grey for VPS Series Probes
PM9080	Optical Interface Adapter Cable for serial port
OC4USB	Optical Interface Adapter Cable for USB Port
PM9090	Probe Pin Grabber Flexible Clip for VPS Series Probes
PM9094	Mini Testhook Set for PM8918 Probes
PAC91	Printer Adapter Cable

Battery Packs	
PM9086	NiCd Battery Pack for 90 Series
BP120MH	NiMH Battery Pack for 120 Series + 43B
BP190	NiMH Battery Pack for 190 + 430 Series

All accessories have a one year warranty

Power Quality Tools and Power Analyzers

We offer an extensive range of power quality test tools for troubleshooting, predictive maintenance and long-term recording in industrial and utility applications. For the development and test of electrical equipment, our high-precision power analyzers enable easy and reliable use in the field or as a bench unit in test laboratories.

Power Quality Selection Guide

Check the Fluke Web for detailed specifications

	Fluke 435 Power Quality Analyzer	**Fluke 434** Power Quality Analyzer	**Fluke 1735** Power Logger	**Fluke 1743** Power Quality Logger	**Fluke 1744** Power Quality Logger	**Fluke 1745** Power Quality Logger	**Fluke 1760** Power Quality Recorder	**Fluke 345** Power Quality Clamp Meter	**Fluke 43B** Power Quality Analyzer	**Fluke VR1710** Plug-In Voltage
Applications										
1-Phase / 3-Phase	3-Phase	3-Phase	3-Phase	3-Phase	3-Phase	3-Phase	3-Phase	1-Phase	1-Phase	1-Phase
Frontline Troubleshooting	●	●						●	●	
Predictive Maintenance	●	●		●	●	●	●			●
Load Study, PQ Survey	●	●	●	●	●	●	●			
Compliance (EN50160)	●	●		●	●	●	●			●
Long-term Analysis	●		●	●	●	●	●			●
Features										
Display	Color Graphical	Color Graphical	Color Graphical	LEDs	LEDs	LCD and LEDs	LEDs	Color Graphical	B&W Graphical	LED
Voltage Channels	4	4	3	4	4	4	4 (8 without current)	1	1	1
Current Channels	4	4	4	4	4	4	4 (0 with 8 voltage)	1	1	
Included Current Probes	3000A Flexis	40A / 400A Clamps	15A / 150A / 3000A Flexis	15A / 150A / 1500A / 3000A Flexis	15A / 150A / 1500A / 3000A Flexis	15A / 150A / 1500A / 3000A Flexis	200A / 1000A Flexis	2000A	40A / 400A Clamps	
Dust/Water Resistance	IP51	IP51	IP65 (except battery housing)	IP65	IP65	IP50	IP50	IP40	IP51	
Safety Rating	1000V CAT III 600V CAT IV	1000V CAT III 600V CAT IV	600V CAT III	600V CAT III	600V CAT III	600V CAT III	1000V CAT III 600V CAT IV	600V CAT IV	600V CAT III	300V CAT II
Software	Fluke Power Log/ FlukeView	FlukeView	Fluke PQ Log	Fluke PQ Log	Fluke PQ Log	Fluke PQ Log	Fluke PQ Analyse	Fluke Power Log	FlukeView	Fluke Power Log
Battery Operation (hours)	7	7	24			5	40 minutes	24	6.5	
Recording Capability										
Typical Recording Period (Days)	1 month	1 week	1 month	3 months	3 months	3 months	3 months	1 day	1 week	Up to 10 minutes
Memory	16 MB	8 MB	4 MB	8 MB	8 MB	8 MB	2 GB	2 MB	0.5 MB	175.000 events
MIN/MAX/AVG Logging	●	●	●	●	●	●	●	●	●	●
Flicker	●	●	●		●	●	●			●
Harmonics	●	●	●		●	●	●	●	●	●
Event Capture	●	●	●	●	●	●	●		●	●
Waveform Capture	●	●	●				●	●	●	
User-defined Logging	●			●	●	●	●			
Power of Measured Signals				●	●	●				
Sample Rate	20.48 kHz	20.48 kHz	10.24 kHz	10.24 kHz	10.24 kHz	10.24 kHz	10.24 kHz	9.6 kHz	12.8 kHz & 15.36 kHz	1/2 cycle with time stamp
High-speed Capture Rate	200 kHz	200 kHz					0.5 or 10 MHz		25 MHz	
Peak Voltage	6 kV	6 kV					6 kV	1 kV	1.25 kV	2.5 kV
Transients	●	●					●		●	●
Analysis Capability										
Statistical Analysis (including EN50160)	●	●	●	●	●	●	●			●
Report Generator	●	●	●	●	●	●	●	●		●
Root Cause Analysis				●	●	●	●			
Accuracy										
IEC 61000-4-30 Class A Compliant	●						●			
Voltage RMS	0.1% Vnom	0.5% Vnom	±(0.5%+ 10 counts)	0.1% of range	0.1% of range	0.1% of range	0.1% Vnom		±(1%+ 10 counts)	±2V 0-200V, ±4V 0-270V
Current RMS (excluding clamp unless specified)	±(0.5%+ 5 counts)	±(1%+ 5 counts)	±(1%+ 10 counts)	2% of range with flex CT	2% of range with flex CT	2% of range with flex CT	1% with flex CT		±(1%+ 10 counts)	

FREE DVD

Power Quality in Industrial Applications

Covers the basics of power quality and looks at the tools and inspection techniques used to troubleshoot common problems.

Order your copy at www.fluke.co.uk/DVD or www.fluke.eu/DVD

430 Series Three-phase Power Quality Analyzers

FLUKE®

Fluke 435

Class A
IEC 61000-4-30
Compliant
Fluke 435

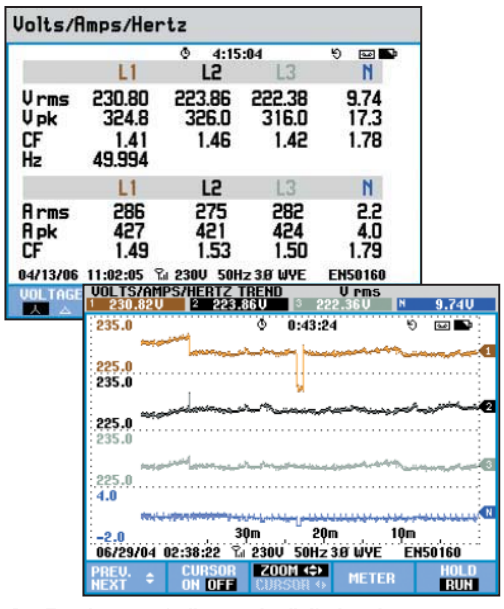
Fluke 434

CAT III 1000V
CAT IV 600V

On all inputs

C US

True RMS



AutoTrend automatically records all displayed parameters in the background.

Pinpoint power quality problems faster, safer and in greater detail

The Fluke 435 and 434 three-phase power quality analyzers help you locate, predict, prevent and troubleshoot problems in power distribution systems. These easy-to-use handheld tools have many innovative features to give you the details to pinpoint problems faster and safer.

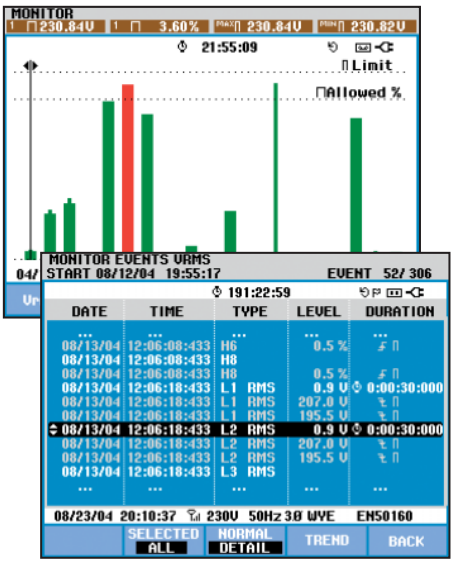
- Complete three-phase troubleshooting tool: measures virtually every power system parameter: voltage, current, frequency, power, power consumption (energy), unbalance and flicker, harmonics and inter-harmonics. Captures events like dips and swells, transients, interruptions and rapid voltage changes.
- The Fluke 435 features 0.1 percent voltage accuracy making it fully compliant with the IEC 61000-4-30 Class A standard
- Logger: record the detail you need. Detailed, user-configurable long-time recording gives you the MIN, MAX and AVG readings of up to 100 parameters on all 4 phases with selectable averaging time down to 0.5 seconds. Enough memory is available to record 400 parameters with 1 minute resolution for up to a month.
- Four channels: simultaneously measures voltage and current on all three phases and neutral.
- AutoScaling: easier trend analysis with automatic scaling of the vertical axis you will always use the full display to view the waveforms.
- Automatic transient display: captures up to 40 dips, swells, interruptions or transients automatically.
- Meets the stringent 600 V CAT IV, 1000 V CAT III safety standard required for measurements at the service entrance.
- Rugged, handheld instrument operates for more than 7 hours on included rechargeable NiMH battery pack. Menu-driven interface simplifies operation.
- Extensive data analysis possibilities. Cursors and zoom can be used 'live' while taking the measurements, or 'offline' on stored measurement data. The stored measurements can also be transferred to a PC with FlukeView software (included with Fluke 435 and 434).
- The Fluke 435 comes with Power Log software to analyse recorded data and to create reports.
- Complete package includes everything to get started: 4 current clamps, 4 flex clamps with Fluke 435, 5 voltage test leads and clips, line adapter/battery charger and hard case.
- Complies with IEC 61000-4-30 measurement standards.

AutoTrend – Quickly see the trend

Unique AutoTrend gives you fast insight into changes over time. Every displayed reading is automatically and continuously recorded without having to set up threshold levels or interval times, or having to manually start the process. You can quickly view trends in voltage, current, frequency, power, harmonics or flicker on all three phases plus neutral. And you can analyze the trends using the cursors and zoom function – even while background recording continues.

SystemMonitor – Check performance against EN50160 with ease

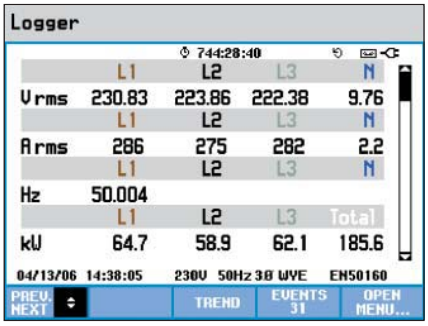
With a single push of a button, the unique System-Monitor gives you an overview of power system performance, and checks the compliance of incoming power to EN50160 limits or to your own custom specifications. The overview is shown on a single screen, with color-coded bars clearly indicating which parameters fall outside the limits.



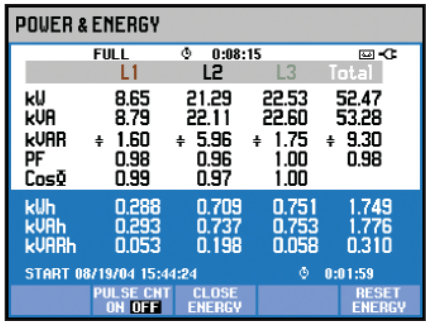
The System-Monitor overview screen gives instant insight into whether the voltage, harmonics, flicker, frequency and the number of dips and swells fall outside the set limits. A detailed list is given of all events falling outside the set limits.

430 Series Three-phase Power Quality Analyzers

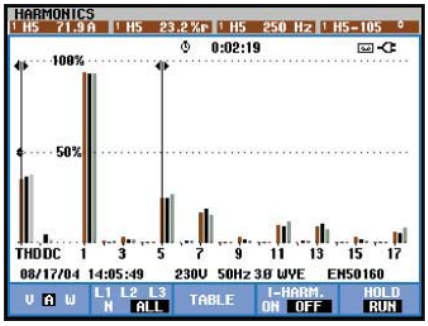
FLUKE®



Logging function allows you to customize measurement selections and provides instantaneous analysis of user-selectable parameters.



Measure and record power (W), VA and VARs. The 434 and 435 add the ability to record energy consumption.



Track harmonics up to the 50th, and measure and record THD in accordance with IEC61000-4-7 requirements

Fluke 435 with flex clamps

Included Accessories

Fluke 435/434: Hard carrying case C430 (434)/ Water-tight hard case with rollers C435 (435)
4 current clamps, i400s, CAT IV 600 V (Fluke 434)
4 current clamps, i430-Flex-4pk, CAT IV 600 V (Fluke 435)
5 Test leads, 4black, 1 green
Battery Charger Eliminator, BC430
FlukeView Software, SW43W
Power Log Software (435)
Optical Cable for USB, OC4USB
Color localization set, WC100
Getting Started printed
User Manual (CD-ROM)
Basic versions: Excl. current clamps

Ordering information

Fluke 435/Basic	Power Quality Analyzer (three phase)
Fluke 435	Power Quality Analyzer (three phase)
Fluke 434/Basic	Power Quality Analyzer (three phase)
Fluke 434	Power Quality Analyzer (three phase)
Fluke 434/LOG	Logger Upgrade Kit: Adds the Logger Function of the 435 to the 434
OC4USB	Serial Interface Adapter/Cable (USB)
PM9080	Serial Interface Adapter/Cable (RS232)
GPS430	GPS sync module for 430 Series

Specifications

(Check the Fluke web for detailed specifications)

Inputs	Number of inputs	4 voltage and current (3 phases + neutral)	
	Maximum input voltage	1000 Vrms (6kV Peak)	
	Maximum sampling speed	200 kS/s on each channel simultaneously	
		Measurement range	**Accuracy**
Volt/Amps/Hertz	Vrms (AC+DC)	1…1000 V	± 0.1% of nominal voltage
	Vpk	1…1400 V	5% of Vnom
	Crest factor, voltage	1.0 ... > 2.8	± 5%
	Arms (AC+DC)	0…20,000 A	± 0.5% ± 5 counts
	Apeak	0 - 5500 A	5%
	Crest factor, A	1 … 10	± 5%
	Hz 50Hz nominal	42.50 ... 57.50 Hz	± 0.01Hz
Dips and swells	Vrms (AC+DC) [2]	0.0% ….100% of Vnom	± 0.2% of nominal voltage
	Arms (AC+DC) [2]	0 … 20,000 A[1]	± 1% ± 5 counts
Harmonics	Harmonic (interharmonic) (n)	DC, 1..50; (Off, 1..49) measured according to IEC 61000-4-7	
	Vrms	0.0 … 1000 V	± 0.05% of nominal voltage
	Arms	0.0 … 4000 mV x clamp scaling	± 5% ± 5 counts
	Watts	depends clamp scaling and voltage	± 5% ± n x 2% or reading, ± 10 counts
	DC voltage	0.0 … 1000 V	± 0.2% of nominal voltage
	THD	0.0 … 100.0 %	± 2.5% V and A (± 5% Watt)
	Hz	0 … 3500 Hz	± 1 Hz
	Phase angle	-360° ... +360°	± n x 1.5°
Power and Energy	Watt, VA, VAR	1.0 … 20.00 MVA[1]	± 1.5% ± 10 counts
	kWh, kVAh, kVARh	00.00 …200.0 GVAh[1]	± 1.5% ± 10 counts
	Power Factor/ Cos φ / DPF	0…1	± 0.03
Flicker	Pst (1min), Pst, Plt, PF5	0.00 … 20.00	±5%
Unbalance	Volts	0.0 … 5.0%	± 0.5%
	Current	0.0 … 20%	± 1%
Transient capture	Volts	± 6000 V	± 2.5% of Vrms
	Minimum detect duration	5 µs (200 kS/s sampling)	
Inrush mode	Arms (AC+DC)	0.000 … 20.00 kA[1]	± 1% of meas ± 5 counts
	Inrush duration (selectable)	7.5 s … 30 min	± 20 ms (Fnom = 50 Hz)
AutoTrend recording	Sampling	5 readings/sec continous sampling per channel	
	Memory	1800 min, max and avg points for each reading	
	Recording time	Up to 450 days	
	Zoom	Up to 12x horizontal zoom	
Memory	Screens & data	50, shared memory divided between logging, screens and data sets	
Standards	Measurement methods used	IEC61000-4-30 class A; EN50160; IEC 61000-4-15; IEC 61000-4-7	

[1] depending clamp scaling
[2] Value is measured over 1 cycle, commencing at a fundamental zero crossing, and refreshed each half-cycle

Battery life: > 7 hours with rechargeable NiMH (installed); **Battery charging time:** 4 hours typical
Safety: EN61010-1 (2nd edition) pollution degree 2; 1000 V CAT III / 600 V CAT IV
Case: Rugged, shock proof with integrated protective holster, IP51 (drip and dust proof)
Shock: 30 g; Vibration: 3g according to MIL-PRF-28800F Class 2
Operating temperature: 0°C to +50°C
Size (HxWxD): 256 mm x 169 mm x 64 mm; **Weight:** 1.1 kg
Three Years Warranty

Recommended Accessories

GPS430

i430-flex-4pk
See page 80

i5sPQ3
See page 80

i1000s
See page 102

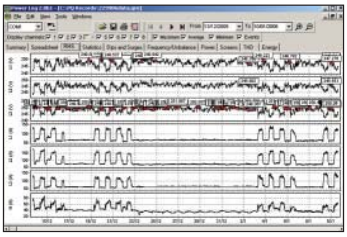
OC4USB
See page 69

See page 80 for power quality current clamps

1735 Power Logger

FLUKE®

Fluke 1735



View recorded data in simple graphs and tables with Fluke Power Log software.

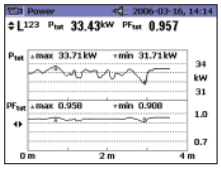
Customize the report generator to easily generate professional looking reports.

600V CAT III

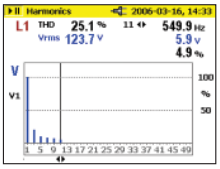
Performs electrical load studies, energy consumption testing, and general power quality logging

The Fluke 1735 Power Logger is the ideal tool for electricians and maintenance technicians for conducting energy studies and basic power quality logging. The 1735 is easy to set up with its color display and four included flexible current probes. The 1735 logs most electrical power parameters, harmonics and captures voltage events. View graphs and generate reports with the included Fluke Power Log software.

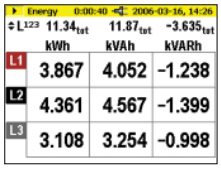
- Record power and associated parameters for up to 45 days
- Monitor maximum power demand over user-defined averaging periods
- Prove the benefit of efficiency improvements with energy consumption tests
- Measure harmonic distortion caused by electronic loads
- Improve reliability by capturing voltage dips and swells from load switching
- Confirm instrument setup easily with color display of waveforms and trends



Conduct load studies for up to 45 days and view saved data on-screen or on a computer.

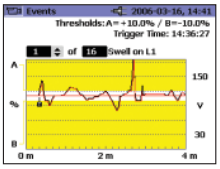


Access voltage and current harmonics up to the 50th.



	kWh	kVAh	kVARh
L1	3.867	4.052	-1.238
L2	4.361	4.567	-1.399
L3	3.108	3.254	-0.998

Quantify energy consumption quickly on-screen or log to memory for extended periods.



Capture voltage events using user-defined thresholds.

Specifications

(Check the Fluke web for detailed specifications)

Volts rms	V-rms wye measurement ranges: 57 V/66 V/110 V/120 V/127 V/220 V/230 V/240 V/260 V/277 V/347 V/380 V/400 V/417 V/480 V ac V-rms delta measurement ranges: 100 V/115 V/190 V/208 V/220 V/380 V/400 V/415 V/450 V/480 V/600 V/660 V/690 V/720 V/830 V ac
Amps rms	Flexi set measurement range: 15 A/150 A/3000 A rms (at sine) Current clamp measurement range: 1 A/10 A
Frequency	Measurement range: 46 Hz to 54 Hz and 56 Hz to 64 Hz
Harmonics and THD	To 50th harmonic (< 50 % of nom)
Power measurement (P – Active, S – Apparent, Q – Reactive, D – Distorting)	Measuring range: see V-rms and A-rms measurement ranges
Energy Measurement (kWh, KVAh, kVARh)	Measuring range: see V-rms and A-rms measurement rangeso
PF (Power factor)	0.000 to 1.000
Events	Detection of voltage dips, voltage swells and voltage interruptions with a 10 ms resolution and measuring error of the half period sine wave of rms.
General	
Memory	4 MB Flash memory, 3.5 MB for measuring data
Sample rate	10.24 kHz
Line frequency	50 Hz or 60 Hz, user-selectable, with automatic synchronization

Display: VGA Graphic Color transmissive displays 320 x 240 pixels with additional background lighting and adjustable contrast, text and graphics in color
Interface: RS-232 SUB-D socket; 115.2 k Baud, 8 data bits, no parity, 1 stop bit, firmware updates are possible with the RS-232 interface (9-pole extension cable)
Housing: IP65; EN60529 (refers only to the main housing without the battery compartment)

Power supply: NiMH battery-pack, with ac adapter (15 V to 20 V/0.8 A)
Battery Life: Typical > 12 hours without backlight and > 6 hours with backlight high
Operating temperature: 0°C to +40°C
Size (HxWxD): 240 mm x 180 mm x 110 mm
Weight: 1.7 kg, including battery
Two Year Warranty

Included Accessories

Soft carrying case, 4 flexible current probes (15 A/150 A/3000 A), Power Log software, Voltage leads and clips, Color localization set, PC interface cable, International ac adapter (115/230 V, 50/60 Hz), Printed English manual, and Multi-language manual CD.

Ordering Information

Fluke 1735 Power Logger

Recommended Accessories

See page 80 for power quality current clamps

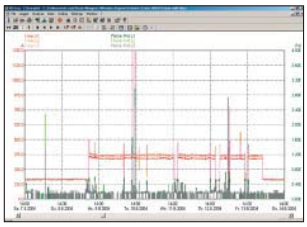
1740 Series Three-Phase Power Quality Loggers *Memobox*

FLUKE®

Fluke 1743

Fluke 1744

Fluke 1745



The included PQ Log software helps you to quickly identify the root cause of a disturbance.

Assess power quality and conduct long-term studies with ease

Compact, rugged and reliable, the Fluke 1740 Series three-phase power quality loggers are everyday instruments for technicians who troubleshoot and analyze power distribution systems. Capable of simultaneously logging up to 500 parameters for up to 85 days and capturing events, the Fluke 1740 Series helps uncover intermittent and hard-to-find power quality issues. There are three models to choose from to meet your basic or advanced power logging needs.

Fluke 1743: IP65 water-proof monitor for logging the most common power parameters including V, A, W, VA, VAR, PF, energy, flicker, voltage events and THD. Select from single-phase or three-phase models.

Fluke 1744: Includes the same features as the Fluke 1743. In addition to common power parameters, the Fluke 1744 also measures voltage and current harmonics, interharmonics, mains signaling, unbalance, and frequency.

Fluke 1745: Advanced IP50 power quality logger with the same measurement capability as the 1744, plus real-time LCD, five hour UPS.

- **Plug and play:** Setup in minutes with automatic current probe detection and powering
- **Installs inside the cabinet:** Compact, fully-insulated housing and accessories fit easily in tight spaces next to live power
- **Monitors power for the long-term:** Data can be downloaded during recording without interruption
- **Measure voltage with premium accuracy:** IEC61000-4-30 Class-A compliant voltage accuracy (0.1%)
- **Quickly validate quality of power:** Assess power quality according to EN50160 power quality standard with statistical overview

Specifications

(Check the Fluke web for detailed specifications)

	1745	1744	1743
Measurement of common power parameters: V, A, W, VA, VAR, PF, energy, flicker, voltage events (dips, swells, interruptions), and THD	●	●	●
Measurement of voltage and current harmonics to the 50th, unbalance, frequency and mains signaling	●	●	
Dust/water resistance	IP 50	IP 65 water proof	
Display	LED + LCD	LED	LED
Memory	8 MB	8 MB	8 MB
UPS ride-through	> 5 hrs	3s	3s
EN 50160	●	●	●

Power supply: 88 V … 660 V ac
Safety: IEC/EN 61010-1 600 V CAT III, 300 V CAT IV, pollution degree 2, double insulation
Housing: Fully insulated housing and accessories
Operating temperature: 0 °C to 35°C
Interface: RS 232, 9600 … 115 000 Baud, automatic Baud rate selection, 3-wire communication

Size: Fluke 1745: 282 mm x 216 mm x 74 mm; Fluke 1743/44: 170 mm x 125 mm x 55 mm
Weight: Fluke 1745 – approx. 3 kg; Fluke 1743/44: approx. 2 kg
Two Year Warranty

Included Accessories

Fluke 1743/1744/1745: 4 Flexible probes 15/150/1500/3000 A with 2 m cable, CD-ROM with PQ Log software, RS232 interface cable and RS232-USB adapter, 4 black dolphin clips, Test leads for voltages and power supply, Color localization kit, Carrying bag, Test certificate with measurement values, Printed English manual, and Multi-language manual CD.
Basic models: Excl. current clamps

Ordering Information

Fluke 1743A	Power Quality Logger Memobox, single-phase
Fluke 1743B	Power Quality Logger Memobox, 3-phase
Fluke 1743A	Basic Power Quality Logger Memobox, single-phase
Fluke 1743B Basic	Power Quality Logger Memobox, 3-phase
Fluke 1744	Power Quality Logger Memobox
Fluke 1744 Basic	Power Quality Logger Memobox
Fluke 1745	Power Quality Logger Memobox
Fluke 1745 Basic	Power Quality Logger Memobox

Recommended Accessories

Model	Description
• MBX 300 POLESET	Pole mounting kit

See page 80 for power quality current clamps

1760 Three-Phase Power Quality Recorder *Topas*

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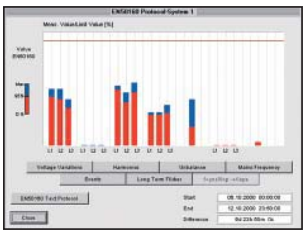
Fluke 1760



The included PQ Analyze software provides a detailed overview of several power quality parameters on one dashboard according to the EN50160 power quality standard.

Class-A compliance for the most demanding power quality tests

The Fluke 1760 Three-Phase Power Quality Recorder is fully compliant to IEC 61000-4-30 Class-A, for advanced power quality analysis and consistent compliance testing. Designed for analysis of utility and industrial power distribution systems, in medium and low-voltage networks, the Fluke 1760 provides the flexibility to customize thresholds, algorithms, and measurement selections. It has 8 input channels (4 currents/4 voltages or 8 voltages), and captures the most comprehensive details on user selectable parameters.

- **GPS time synchronization:** Correlate data with events or datasets from other instruments with precision
- **Uninterrupted power supply (40 minutes):** Never miss important events - even record the beginning and end of interruptions and outages
- **10 MHz, 6000 Vpk waveform capture:** Get a detailed picture of even the shortest event
- **2 GB data memory:** Enables detailed, simultaneous recording of numerous power parameters for long periods of time
- **Includes Comprehensive software:** Provides trend diagrams for root cause analysis, statistical summaries, report writing and real-time data monitoring in the online mode

Features

(Check the Fluke web for detailed specifications)

	1760 Basic	1760TR Basic	1760	1760TR
Power quality statistics according to EN50160	●	●	●	●
Voltage event list (dips, swells and interruptions)	●	●	●	●
Continuous recording of:				
Voltage	●	●	●	●
Current	●	●	●	●
Power P, Q, S	●	●	●	●
Power factor	●	●	●	●
kWh	●	●	●	●
Flicker	●	●	●	●
Unbalance	●	●	●	●
Frequency	●	●	●	●
Voltage and current harmonics to the 50th/ Interharmonics	●	●	●	●
THD	●	●	●	●
Mains signaling	●	●	●	●
Triggered recordings	●	●	●	●
Online mode (Oscilloscope, transients and events)	●	●	●	●
Fast transient analysis up to 10 MHz		●		●
4 voltage probes			●	●
4 dual-range flexible current probes (1000 A / 200 A ac)			●	●
GPS time sync receiver			●	●
Memory	2 GB Flash memory			

Power supply: : 83 V to 264 V, 45 to 65 Hz
Battery pack: NIMH, 7.2 V, 2.7 Ah (up to 40 minutes back-up power supply)
Safety: 600V CAT IV/1000V CAT III (Rated for use at the service entrance)
Housing: Fully insulated robust plastic housing

Operating temperature: 0 °C to 35°C
Interfaces: Ethernet (100 MB/s), RS-232, external modem via RS-232
Size (H x W x D): 325 mm x 300 mm x 65 mm
Weight: Approxiamtely 4.9 kg
Two Year Warranty

Included Accessories

2 GB internal Flash-memory, PC software on CD-ROM, 1 Ethernet cable for network connection, 1 crosslink Ethernet cable for direct PC connection, 1 mains cable, hardware and software manual, 1 carrying bag.
Basic models: excl. current clamps

Ordering Information

Fluke 1760 Basic	Power Quality Recorder *Topas*
Fluke 1760TR Basic	Power Quality Recorder *Topas*
Fluke 1760	Power Quality Recorder *Topas*
Fluke 1760TR	Power Quality Recorder *Topas*

Recommended Accessories

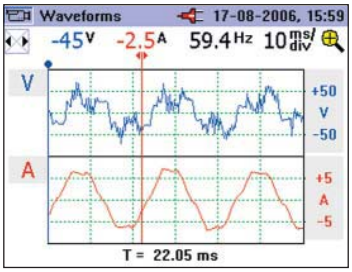
(Check the Fluke web for complete accessory list)

Model	Description
• TPS VOLTPROBE 10 V	10 V Voltage Probes (Range: 0.1 V to 17 V)
• TPS VOLTPROBE 100 V	100 V Voltage Probes (Range: 1 V to 170 V)
• TPS VOLTPROBE 400 V	400 V Voltage Probes (Range: 4 V to 680 V)
• TPS VOLTPROBE 600 V	600 V Voltage Probes (Range: 10 V to 1000 V)
• TPS VOLTPROBE 1 KV	1000 V Voltage Probes (Range: 10 V to 1700 V)
• TPS FLEX 18	Flexible Current Probe (Range: 1 A to 100 A / 5 A to 500 A)
• TPS FLEX 24	Flexible Current Probe (Range: 2 A to 200 A / 10 A to 1000 A)
• TPS FLEX 36	Flexible Current Probe (Range: 30 A to 3000 A / 60 A to 6000 A)
• TPS CLAMP 10 A / 1 A	Clip-on Current Transformer (Range: 0.01 A to 1 A / 0.1 A to 10 A)
• TPS CLAMP 50 A / 5A	Clip-on Current Transformer (Range: 0.05 A to 5 A / 0.5 A to 50 A)
• TPS CLAMP 200 A / 20 A	Clip-on Current Transformer (Range: 0.2 A to 20 A / 2 A to 200 A)
• TPS SHUNT 20 MA	20 mA ac/dc Shunt (Range: 0 to 55 mA)
• TPS SHUNT 5 A	5 A ac/dc Shunt (Range: 0 to 10 A)

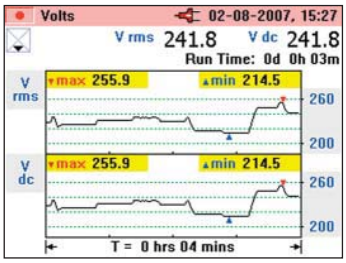
Fluke 345
Power Quality Clamp Meter

FLUKE®

Fluke 345



View waveforms for equipment checking and setup



Log parameters over time to track down intermittent faults

600V CAT IV

The ideal troubleshooting tool for modern electrical loads

The Fluke 345 measures a wide range of electrical parameters for troubleshooting power disturbances in single- and three-phase electrical loads. With a bright color display to see waveforms and trends, a low-pass filter to remove high frequency noise, and a high EMC immunity design, the Fluke 345 is ideal for measurements on switching loads such as variable speed drives, electronic lighting and UPS systems.

- **High safety rating:** 600V CAT IV / 1000V CAT III rated for use at the service entrance
- **ac/dc current measurements:** Clamp-on measurement of ac peak and dc current up to 2000 A without breaking the circuit
- **Harmonic analysis:** Analyze, display and log harmonics up to the 30th harmonic (40th harmonic for 15 Hz to 22 Hz)
- **Verify batteries:** Direct measurement of dc ripple (%) for battery and dc systems

Specifications

(Check the Fluke web for detailed specifications)

Current measurement	
DC, DC rms, AC rms	All measurements dc and 15 Hz to 1 kHz. Maximum overload 10,000 A or RMS x frequency < 400,000. Amps rms is a true rms measurement (ac + dc).
Measuring range	0 – 2000 A dc or 1400 ac rms
Harmonics	All measurements up to 30th harmonic (40th harmonic for 15 Hz to 22 Hz); Frequency range F_0 : 15 Hz to 22 Hz and 45 Hz to 65 Hz; I_{acrms} > 10A
Voltage measurement	
DC, DC rms, AC rms	All measurements dc and 15 Hz to 1 kHz. Maximum overload 1,000 V rms. Volts rms is a true-rms measurement (AC + DC).
Measuring range	0 – 825 V dc or ac rms
Harmonics	All measurements up to 30th harmonic; Frequency range F_0 : 15 Hz to 22 Hz and 45 Hz to 65 Hz; V_{acrms} > 1V
Watts measurement (single- and three-phase)	DC, DC rms, AC rms
Measuring range	0 – 1650 kW dc or 1200 kW ac
VA measurement (single- and three-phase)	DC, DC rms, AC rms
Measuring range	0 -1650 kVA dc or 1200 kVA ac
VAR measurement (single- and three-phase)	
Measuring range	0 – 1250 kVAR
Power factor (single- and three-phase)	
Measuring range	0.3 cap…1.0… 0.3 ind (72.5° cap…0°… 72.5° ind)
Displacement power factor	
Measuring range	0.3 cap … 1.0 … 0.3 ind (72.5° cap ... 0° ... 72.5° ind)
Kilowatt Hour (kWHr)	
Measuring range	40,000 kWHr
Scope function	
Time base	2.5 ms, 5 ms, 10 ms, 25 ms, 50 ms/div
Current management:	
Ranges	10 A/20 A/40 A/100 A; 200 A/400 A/1000 A/2000 A
Voltage measurement:	
Ranges	4 V/10 V/20 V/40 V/100 V; 200 V/400 V/1000 V
Inrush current function	All measurements dc and 15 Hz to 1 kHz
Ranges	40, 400 and 2000 A
Memory	Up to 50 screen shots and over 150,000 individual measurement values

Power supply: 1.5 V Alkaline AA MN 1500 or IEC LR6 x 6 Battery
Battery life (typical): >10 hours (backlight on full); >12 hours (backlight reduced)
Safety: IEC 61010-1 600 V CAT IV, 1000V CAT III (maximum input phase-phase 825V rms) double or reinforced insulation, pollution degree 2
Protection: IP40; EN60529
Operating temperature: 0 °C to 50 °C

Display: Color transmissive LCD 320 x 240 pixels (70 mm diagonal) with 2 level backlight
Digital output: USB interface to a PC
Size (HxWxD): 300 mm x 98 mm x 52 mm
Jaw opening: 60 mm
Jaw capacity: 58 mm diameter
Weight (including batteries): 0.82 kg
Two Year Warranty

Included Accessories

Soft carrying case, Power Log software, Test probes, Test leads, Alligator clips, International ac adapter / battery eliminator, Printed English User manual, Multi-language manual on CD

Ordering Information

Fluke 345 Power Quality Clamp Meter

Recommended Accessories

TLK291
See page 101

TP220
See page 101

AC220
See page 101

TP1
See page 101

C550
See page 106

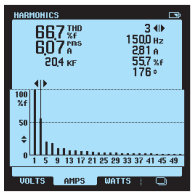
43B Single-phase Power Quality Analyzer

FLUKE ®

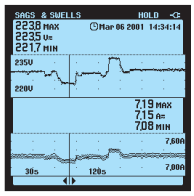
Fluke 43B

The perfect tool for tracking down single-phase power-related problems

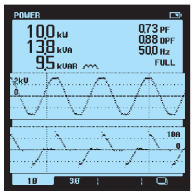
The Fluke 43B is the choice for diagnosing and troubleshooting power quality and general equipment failures. Ease to use thanks to menu selection of the power modes, it combines the capabilities of a power quality analyzer, a 20 MHz oscilloscope, a multimeter and a data recorder in a single instrument.



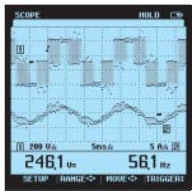
- *Voltage, current, and power harmonics*
- *Up to 51st harmonic*
- *Total harmonic distortion (THD)*
- *Phase angle of individual harmonics*



- *Continuously measure volts and amps on a cycle-by-cycle basis for up to 16 days*
- *Use cursors to read time and date of sags and swells*



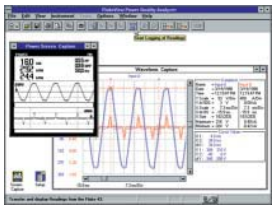
- *Watts, power factor, COS φ, VA and VAR*
- *Voltage and current waveforms*



- *Connect-and-View™ scope for quick waveform display*
- *View voltage and current channels simultaneously*

600V CAT III

On all inputs



True RMS

Specifications

(Check the Fluke web for detailed specifications)

Menu items	Measurements	Ranges	Accuracy
Volts/Amps/Hz	Volts Amps Mains frequency CF Crest Factor	5.000 V-1250 V 50.00A-50.00 kA 40.0 - 70.0 Hz 1.0 to 10.0	±(1%+10) ± (1%+10) ± (0.5%+2) ± (5%+1)
Power	Watts, VAR, VA PF, DPF, COS φ	250 W-1.56 GW 0.25-0.9 0.90-1.00	± (4%+4) ± 0.04 ± 0.03
Harmonics	Volts Amps Watts K-factor	1st to 51st harmonic 1st to 51st 1st to 51st 1.0 to 30.0	± (3%+2) to ± (15%+5) ± (3%+8) to ± (15%+5) ± (5%+2) to ± (30%+5) ± 10%
Sags & Swells	Voltage and Current	4 min-16 days selectable	± (2%+10)
Transient Capture	40 ns pulse width Up to 40 transients	Select 20/50/100/200% above or below line voltage	± 5% of full scale
Inrush Current	1sec. to 5 min selectable	1 A to 1000 A	± 5% of full scale
Ohms/Continuity/ Capacitance	Ohms Capacitance	500.0 Ω to 30.00 MΩ 50.00 nF to 500.0 µF	± (0.6%+5) ± (2%+10)
Temperature (with accessory)	°C °F	-100.0°C to 400.0°C -200.0°F to 800.0°F	± (0.5%+5)
Scope	DC, AC, AC+DC, peak, peak-peak, Hz, duty cycle, phase, pulse width, crest factor	Sampling rate: Bandwidth: Voltage BW (Channel 1) Current BW (Channel 2)	25 MS/sec 20 MHz 15 kHz
Screen saves	All functions	20 screens	
Recording	V/A/Hz, Power, Harmonics, Ω/Cap, Temperature, Scope	4 min – 16 days selectable	Select any two parameters display mode in each

Battery life: Rechargeable Ni-MH pack (charger included), 6 hrs typical (continuous)
Shock & Vibration: Mil 28800E, Type 3, Class III, Style B.
Operating temperature: 0°C to 50°C; Case: IP51 (dust, drip, waterproof)
Size (HxWxD): 232 mm x 115 mm x 50 mm; **Weight:** 1.1 kg
Three Years Warranty

Included Accessories

TL224 test lead set, AC220 alligator clip set, TP4 test probe set, BP120MH rechargeable battery pack, BB120 shielded BNC adapter, PM8907 line adapter/charger, i400s AC current clamp, AB200 alligator clip set, TP1 test probe set, C120 hand carrying case, OC4USB interface cable, SW43W FlukeView software, VPS 40 voltage probe, Fluke 61 IR thermometer, user and application manual.

Ordering Information

Fluke 43B Power Quality Analyzer (single-phase)

Recommended Accessories

i2000flex
See page 102

i1000s
See page 102

80TK
See page 104

PAC91
See page 69

VR1710
Single-Phase Voltage Quality Recorder

FLUKE®

Fluke VR1710

Fluke VR1710 and included accessories

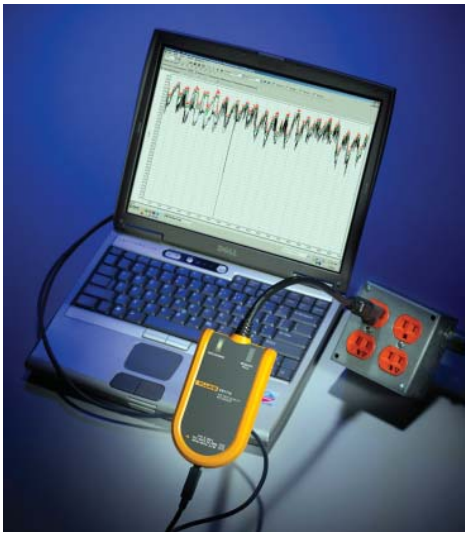
Easy-to-use solution for detecting and recording voltage quality problems

The Fluke VR1710 is a single-phase, plug-in voltage quality recorder that provides fast and easy recording of voltage trends, dropouts, harmonics and general power quality including dips and surges to help maintenance and facilities management personnel easily pinpoint the root cause of voltage problems. Voltage quality parameters including RMS average, transients, flicker, and harmonics up to the 32nd are recorded using a user-selected average period from 1 second to 20 minutes.

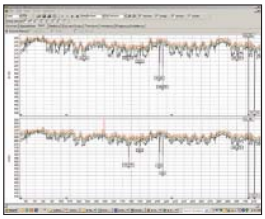
- Clear graphical summary of data and quick overview of key power quality parameters
- Get the complete picture with Min, Max, Average RMS values (1/4 cycle) with time stamps
- See the detailed with actual transient display (> 100 µs) with time stamp
- Comprehensive analysis of Individual harmonic and THD values with trends
- Remote access capability via an external modem

Applications

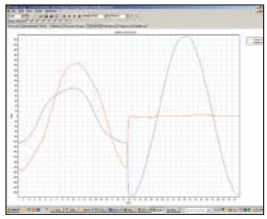
- **Voltage recording** – Monitors and records supply voltage; measures RMS average, minimum and maximum values, and checks whether the socket outlet is providing voltage within tolerance.
- **Distortion measurement** – Measure frequency and harmonics; check whether the distorting loads (UPS systems, drives, etc.) are affecting your other equipment.
- **Flicker measurement** – Quantify the affects of switching loads on lighting systems.
- **Voltage transients** – Capture those intermittent, momentary events that may be affecting your equipment; the full waveform is captured with date, timestamp, and duration.



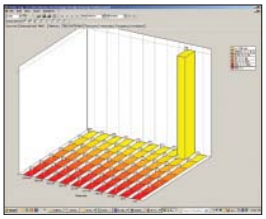
Includes PowerLog software



PowerLog Setup *– Simple set up of internal clock, logging periods, and intervals with default values for quick results.*
PowerLog View *– Data presentation showing RMS voltage and harmonic trends, actual transients, summary information and statistics in accordance with EN50160.*



Actual transient display (> 100 µs) with time stamp *– Quickly identify issues with included graphical software.*



Statistical analysis of voltage event *– reduces analysis time by tracking event quantities and magnitudes.*

Specifications

(Check the Fluke web for detailed specifications)

Operating voltage	70 V to 300 V
Min/Max/Avg RMS value	Resolution 0.125 V
Number of events	175,000
Dips/Interruptions	Yes
Time resolution	5 ms
Voltage resolution)	0.125 V
Over-voltages	Yes
Frequency	Yes
Harmonics measurement	EN 61000-4-7 (up to 32nd)
Flicker measurement	EN 61000-4-15
Number of recording channels	1 Phase to Neutral 2 Phase/Neutral to Ground
Recording time	1 day to 339 days depending on average time from 1 second to 20 minutes
Transients	Yes (> 100µs)
Frequency range	50 Hz ± 1 Hz and 60 Hz ± 1 Hz
Safety category rating	CAT II 300 V

Display: LED
Size (HxWxD): 23 x 19.75 x 22.2 cm

Weight: 0.8 kg
Two years warranty

Included Accessories

Plug-in Fluke VR1710, USB cable, PowerLog software CD, universal power cord adapters.

Ordering Information

Fluke VR1710 Voltage Quality Recorder

Fluke model number	i1A/10A CLAMP PQ3	i1A/10A CLAMP PQ4	i5A/50A CLAMP PQ3	i5A/50A CLAMP PQ4	i20A/200A CLAMP PQ3	i20A/200A CLAMP PQ4	i3000 flex-4PK	i400s	i430-flex-4PK	i5sPQ3
Description	3-phase 1A/10A Mini current clamp set	4-phase 1A/10A Mini current clamp set	3-phase 5A/50A Mini current clamp set	4-phase 5A/50A Mini current clamp set	3-phase 20A/200A Mini current clamp set	4-phase 20A/200A Mini current clamp set	4 phase 3000A Flexible current clamp set	Single phase 400A current clamp (4 required)	4-phase 3000A Flexible current clamp set	3-phase 5A Current clamp set
Old Fluke model #	CURRENT CLAMPS 1A (EP0450A)	MBX CLAMP 1A/10A+N (EP0451A)	MBX CLAMP 5A/50A (EP0452A)	MBX CLAMP 5A/50A+N (EP0453A)	MBX CLAMP 20A/200A (EP0455A)	MBX CLAMP 20/200A+N (EP0456A)				
Fluke 1735	●	●	●	●	●	●				
Fluke 174X	●	●	●	●	●	●				
Fluke 43X							●	●	●	●
Nominal current range(s)	1 A 10 A AC	1 A 10 A AC	5 A 50 A AC	5 A 50 A AC	20 A 200 A AC	20 A 200 A AC	30 A 300 A 3000 A	40 A 400 A	3000 A	5 A
Cont. AC current range	10 mA – 1 A 100 mA – 10 A	10 mA – 1 A 100 mA – 10 A	50 mA – 5 A 500 mA – 50 A	50 mA – 5 A 500 mA – 50 A	200 mA – 20 A 2 A – 200 A	200 mA – 20 A 2 A – 200 A	1 A – 30 A 1 A – 300 A 1 A – 2400 A	0.5 A – 40 A 5 A – 400 A	30 A – 3000 A	0.01 A – 6 A
Highest current	20 A	20 A	100 A	100 A	300 A	300 A	4000 A	1000 A	100 kA	70 A
Lowest measurable current	10 mA	10 mA	50 mA	50 mA	200 mA	200 mA	1 A	0.5 A	30 A	10 mA
Basic accuracy (48–65 Hz) 1)	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	2% + 2 A	2% + 0.15 A	1%	1%
Usable frequency	40 Hz – 10 kHz	40 Hz – 10 kHz	40 Hz – 10 kHz	40 Hz – 10 kHz	40 Hz – 10 kHz	40 Hz – 10 kHz	10 Hz – 100 kHz	45 Hz – 3 kHz	10 Hz – 7 kHz	40 Hz – 5 kHz
Requires battery							●			
Flex head length								Clamp opening: 32 mm	61 cm	Clamp opening: 15 mm
Output level(s)	75 mV/A	75 mV/A	15 mV/A	15 mV/A	3.75 mV/A	3.75 mV/A	10 mV/A 1 mV/A 0.1 mV/A	10 mV/A 1 mV/A	0.085 mV/A @50 Hz	400 mV/A
Output cable (m)	2	2	2	2	2	2	2,1	2,5	2,5	2,5
Safety rating	CAT III 600 V	CAT III 600 V	CAT III 600 V	CAT III 600 V	CAT III 600 V	CAT III 600 V	CAT III 600 V	CAT III 1000 V CAT IV 600 V	CAT III 1000 V CAT IV 600 V	CAT III 600 V
Connection	One connector	One connector	One connector	One connector	One connector	One connector	4 x BNC	4 x BNC	4 x BNC	3 x BNC
BNC to banana adapters included	n/a	n/a	n/a	n/a	n/a	n/a	●			

[1] Basic accuracy: % reading plus floorspec.
n/a = not applicable

i3000 flex-4PK

i400s

i430-flex-4PK

i5sPQ3

FLUKE®

Fluke Norma 4000/5000 Power Analyzers

FLUKE®

Fluke Norma Series Power Analyzers

Fluke Norma 4000

Fluke Norma 5000

Reliable, highly accurate measurements for the test & development of power electronics

The compact Fluke Norma Series Power Analyzers provide the latest measurement technology to assist engineers with the development and testing of motors, inverters, lighting, power supplies, transformers and automotive components.

Based on a patented, high-bandwidth architecture, the instruments deliver high-precision measurements of single or three-phase current and voltage, harmonics analysis, Fast Fourier Transformation (FFT) analysis, as well as calculations of power and other derived values.

A unique user-configurable system design with plug-in power phases and other optional modules provides the flexibility to meet a variety of application measurement requirements. Recorded data and waveforms can be viewed clearly in the large color display and easily downloaded to a PC for analysis and report writing.

The Series consists of the Fluke Norma 4000 Three-Phase Power Analyzer and the Fluke Norma 5000 Six-Phase Power Analyzer. These rugged analyzers provide unmatched price performance for easy and reliable use in the field, or as a bench unit in laboratories and on test benches.

- Simple user interface ensures easy, intuitive operation
- Unique user-configurable modular design
- Simultaneous parallel acquisition of all phases
- Voltage, current and power harmonics up to the 40th
- Includes FFT analysis, vector diagram display, recorder function, and Digital Oscilloscope (DSO) mode
- User selectable average time – from 15ms to 3600s
- Expandable on-board memory for storage of measured values

Fast Fourier Transformation (FFT) analysis

Digital Oscilloscop (DSO) mode

Vector Display

Recorder function

Specifications

(Check the Fluke web for detailed specifications)

	Fluke Norma 4000	Fluke Norma 5000
Number of Phases	1 or 3	3, 4 or 6
Weight	Approx. 5 kg	Approx. 7 kg
Size (HxWxD)	15 cm x 23.7 cm x 31.5 cm	15 cm x 44.7 cm x 31.5 cm
On-board Printer	No	Yes (optional)
Display	Color, 5.7" / 144 mm - 320 x 240 pixel	
Bandwidth	dc to 3 MHz or dc to 10MHz depending on input module	
Basic Accuracy	0.2%, 0.1% or 0.03% depending on input modules	
Sampling Rate	0.33 MHz or 1 MHz depending on input modules	
Voltage Input Range	0.3 V to 1000 V	
Current Input Range (direct, not via shunt)	0.03 mA – 20 A depending on input module	
Memory for Configurations	4 MB, expandable to 128 MB	
Memory for Settings	0.5 MB	
Fast Fourier Transformation (FFT)	To the 40th harmonic	
RS232 Interface	Standard	
PI1 Process Interface (8 analog/impulse inputs and 4 analog outputs)	Optional	
IEEE 488.2 /GPIB Interface (1 MBit/s Ethernet / 10 MBit/s or 100 Mbit/s)	Optional	
Fluke NormaView PC Software (for data download, analysis & report writing)	Standard	

Operating temperature:
+ 5 °C to 35 °C
Storage temperature:
- 20 °C to 50 °C
Climatic class: KYG DIN 40040, maximum 85% relative humidity, non-condensing.

Housing: Solid metal case
Safety: EN 61010-1 / 2nd Edition, 1000 V CAT II (600 V CAT III)
Two Year Warranty

1000V CAT II

600V CAT III

Included Accessories

Power Supply Cable, RS232 Interface and USB adaptor for Data Download, Fluke NormaView PC Software, User's Manual, Test Certificate, and Calibration Values.

Ordering Information

Fluke Norma 4000	Three-Phase High Precision Power Analyzer
Fluke Norma 5000	Six-Phase High Precision Power Analyzer

Fluke Norma 4000/5000 Power Analyzer Accessories

Fluke Norma 4000 (rear view)

Fluke Norma 5000 (rear view)

Power Phases

The Fluke Norma 4000 Power Analyzer can be equipped with up to three power phases and the Fluke Norma 5000 Power Analyzer can be equipped with up to six power phases. Users can select the power phase best suited for their application. Specifications vary depending on the model of the power phase.

Each plug-in power phase consists of a voltage and a current measurement channel. Each measuring channel is available for each basic unit.

Power Phase Overview

	3024770	3024812	3024820	3024835
Channel	PP42	PP54	PP50	PP64
Accuracy	0.2% (0.1% rd + 0.1% rg)	0.1% (0.05% rd + 0.05% rg)		0.03% (0.02% rg + 0.01% rg)
Current range	20 A	10 A	10 A	10 A
Sampling rate	341 kHz	1 MHz	341 kHz	341 kHz
Bandwidth	3 MHz	10 MHz	3 MHz	3 MHz

Shunts

The input modules can take up to 10 A or 20 A directly or measure current via wideband precision shunts. The available range of shunts enables measurements up to 1500 A and can be used in conjunction with all of the available input modules.

Optional shunts for Fluke Norma Series Power Analyzers

3024677	32 A Planar Shunt
3024689	Cables for 32 A Planar Shunt
3024886	10 A Triaxial Shunt with Cables (0.333 Ω, 0 to 0.5 MHz)
3024899	30 A Triaxial Shunt with Cables (0.010 Ω, 0 to 0.5 MHz)
3024847	100 A Shunt with Cables (0.001 Ω, 0 to 0.5 MHz)
3024858	150 A Shunt with Cables (0.5 mΩ, 0 to 0.5 MHz)
3024864	300 A Shunt with Cables (0.1 mΩ, 0 to 1 MHz)
3024873	500 A Shunt with Cables (0.1 mΩ, 0 to 0.2 MHz)
3024692	LG Shunt Cables for High Current Shunts

32 A Planar Shunt

Cables & Adaptors

3024661	Measurement Cable Set (for one power phase)
3024704	Fluke Norma WYE Adaptor (external accessory box)

Printer Accessories

3024650	Printer Cable for Fluke Norma 5000 (RS232-Centronics)

All accessories have a two-year warranty.

Field Calibrators

Fluke process calibration tools include a full range of calibrators and troubleshooting tools for instrument technicians working in the process industries. The range of process calibrators include: Documenting Process Calibrators, Multifunction Process Calibrators, single function and multifunction temperature calibrators, a variety of mA loop calibrators and a range of intrinsically safe products.

	Documenting Process Calibrators			Multifunction Process Calibrator		Temperature Calibrators			Pressure Calibrators		Loop Calibrators				ProcessMeters	
Model	**744**	**743B**	**741B**	**725/725Ex**	**726**	**724**	**714**	**712**	**718/718Ex**	**717**	**715**	**707/707Ex**	**771**	**705**	**789**	**787**
Measure																
Voltage DC	300 V	300 V	300 V	30 V	30V	30 V	75 mV				10 V	28 V		28 V	1000 V	1000 V
Voltage AC (true RMS)	300 V	300 V	300 V												1000 V	1000 V
Resistance	11 kK	11 kK	11 kK	3200 K	4000 K	3200 K		3200 K							40 MK	40 MK
Current DC	110 mA	110 mA	110 mA	24 mA	24 mA	24 mA			24 mA	24 mA	24 mA	24 mA	99.9 mA	24 mA	30 mA, 1 A	30 mA, 1 A
Current AC															●	●
Frequency	50 kHz	50 kHz	50 kHz	10 kHz	15 kHz										20 kHz	20 kHz
Pressure	●[1]	●[1]	●[1]	●[1]	●[1]				68,9 mbar to 20 bar / 2 to 7 bar[2]	68,9 mbar to 345 bar[2]						
Temperature: RTD types	8	8	8	7	8	7		7								
Temperature: TC types	11	11	11	12	12	12	9									
Source/Simulate																
Voltage DC	15 V	15 V	15 V	10 V	20 V	10 V	75 mV				10 V					
Resistance	11 kK	11 kK	11 kK	3200 K	4000 K	3200 K		3200 K								
mA DC/% scale	22 mA	22 mA	22 mA	24 mA	24 mA						24 mA	24 mA		24 mA	24 mA	24 mA
mA source; auto step, auto ramp	●	●	●	●	●						●	●		●	●	●
Frequency	50 kHz	50 kHz	50 kHz	10 kHz	15 kHz											
Temperature: RTD types	8	8	8	7	8	7		7								
Temperature: TC types	11	11	11	10	10	10	9									
Record																
Min/Max	●	●	●						●	●					●	●
Hold									●	●			●		●	●
As Found/As Left results	●	●	●													
Log data	●	●														
Upload data to PC	●	●													●	
Remote operation				●/–	●											
Features																
Loop supply	24 V	24 V	24 V	24 V/12 V	24 V	24 V			24 V/–	24 V	24 V	24 V		24 V	24 V	
Hart communication	●															
Integrated hand pressure pump									●							
Intrinsically safe (ATEX)				725Ex					718Ex			707Ex				
NIST traceable certification	●	●	●	●	●	●	●	●	●	●	●	●		●		
Warranty in years	3	3	3	3/1	3	3	3	3	3/1	3	3	3/1	3	3	3	3
See catalog page	85	85	85	86	86	87	88	88	90	90	91	91	92	91	93	93

1 Fluke 700 pressure modules required
2 Ranges for the internal sensor.
Ranges for use of Fluke 700 pressure modules, see page 94.

740 Series Documenting Process Calibrators

FLUKE®

Fluke 744

Fluke 743B

Fluke 741B

Calibrators as versatile as you are

The 740 series Documenting Process Calibrators are rugged, handheld tools for the calibration and troubleshooting of process control instrumentation. These calibrators:

- Calibrate temperature, pressure, voltage, current, resistance, and frequency
- Simultaneously measure and source
- Automatically capture calibration results
- Document procedures and results to meet ISO 9000, EPA, FDA, OSHA, and other government requirements
- Measure/simulate eleven types of thermocouples and eight RTDs
- Store up to 8,000 readings in data logging mode (743B +744 only)
- Protected against dirt, dust, and moisture; unaffected by vibration
- PC interface (743B +744 only)
- Operates in English, French, German, Italian, and Spanish
- One and two-year calibration cycles
- Four types of built-in automated calibration procedures; linear transmitter, square root devices, one and two-point limit switches

741B: A complete documenting calibrator

The 741B is the economical choice for plants that don't use PCs or that require traditional paper forms. It has storage capacity for a day's calibration and measurement data. When you're back at the shop, recall the data on-screen to fill out calibration forms.

743B: More memory, plus a PC interface and data logging

The 743B has all the capabilities of the 741B plus a PC interface that lets you download procedures, lists, and instructions created with software–or upload data for printing, archiving, and analysis. With its expanded memory, the 743B can hold a full week of calibrations and procedures.

744: Get HART-ability

The Fluke 744 offers all of the capabilities of the 743B, plus the ability to calibrate, maintain, and troubleshoot HART instrumentation with just one tool. This rugged, reliable tool offers:

- Integrated HART communication functions, permitting you to monitor, control, and calibrate HART instrumentation.
- NiMH battery with 3500 mA hour life and battery indicator.

Instrumentation Management Software

The Fluke 743B and 744 are compatible with Fluke 700SW DPC/TRACK software and with software from Cornerstone, Fisher-Rosemont, Honeywell, Yokogawa, Prime Technologies and On Time Support.

Included Accessories

Fluke 741B/743B: TL224 Industrial Test Leads (2 sets), AC220 Test Clips (2 sets), TP220 Test Probes (1 set), BP7217 Battery Pack, BC7217 Battery Charger, Instruction Manual, NIST Traceable calibration certificate and data, three-year warranty, serial port cable (743B only), DPC/TRACK Sample Version with free PC communication utility software (743B only).
Fluke 744: TL224 Industrial Test Leads (2 sets), AC220 Test Clips (2 sets), TP220 Test Probes (1 set), BP7235 NiMH Battery Pack, BC7217 Battery Charger, serial port cable, HART communications cable, DPC/TRACK Sample Version with free PC communication utility software, Instruction Manual, HART Users Manual, NIST Traceable calibration certificate and data.

Ordering Information

Fluke 741B	Documenting Process Calibrator
Fluke 743B	Documenting Process Calibrator
Fluke 744	Documenting Process Calibrator
700SW	DPC/Track Software

Specifications

(Check the Fluke web for detailed specifications)

Function	Measure	Sourcing
Voltage DC	0.025% reading + 0.005% full scale	0.01% output + 0.005% full scale
Current DC	0.01% reading + 0.015% full scale	0.01% output + 0.015% full scale
Resistance	0.05% reading + 50mK	0.01% output + 40mK
Frequency	0.05%	0.01%
Thermocouples	0.3°C	0.2°C
RTDs	0.3°C	0.1°C
Pressure	To 0.05% of full scale. See Pressure Module specifications.	

Operating temperature: -10° C to 50° C
Safety: CAT II 300V
Battery Life: Typically over eight hours
Internal Battery Pack: NiCd, 7.2V, 1700 mAh
Battery Replacement: Via snap-shut door without opening calibrator; no tools required
Weight: 1.4 kg
Size (HxWxD): 236 mm x 130 mm x 61 mm
Three Year Warranty

Recommended Accessories

C789
See page 106

TL220
See page 100

80PK-8
See page 104

80PK-25
See page 104

700P27
See page 94

725/725Ex/726 Multifunction Process Calibrators

FLUKE®

Fluke 726

Fluke 725

Fluke 725Ex

More calibration power!

725/725Ex/726 Multifunction Process Calibrators

- Two separate channels; measure, source and view process signals simultaneously
- Measure volts, mA, RTDs, thermocouples, frequency, and resistance to test sensors and transmitters
- Source/simulate volts, mA, thermocouples, RTDs, frequency, and pressure to calibrate transmitters
- Measure or *source pressure using any of 29 Fluke 700Pxx Pressure Modules
- Source mA with simultaneous pressure measurement to conduct valve and I/P tests
- Perform fast linearity tests with auto step and auto ramp features
- Power transmitters during test using 24 V loop supply and simultaneous mA measurement
- Store frequently-used test setups for later use
- For 725Ex version see also page 96 and 97

*Pressure pump required

726 Precision Multifunction Process Calibrator

Additional features:

- More precise measurement and calibration source performance, accuracies of 0.01%
- Transmitter error% calculation
- Memory storage for up to 8 calibration results
- Frequency totalizer and frequency pulse train source mode for enhanced flowmeter testing
- HART mode inserts 250 ohm resistor in mA measure and source for compatibility with HART instrumentation
- Integrated pressure switch test allows you to capture the set, reset and deadband of a switch
- Custom RTD curves, add calibration constants for certified RTD probes for enhanced temperature measurement

Features

Simultaneous Function Capability	Channel A	Channel B
24.000 mA DC	M	M or S
24.000 mA DC with 24 V loop supply	M	
100.00 mV DC		M or S
30.000V DC Measure	M	
20.000V DC Measure 10.000V DC Source **20.000V DC Source**		M or S
15 to 3200 Ohms **5 to 4000 Ohms**		M or S
Thermocouple J, K, T, E, R, S, B, M, L, U, N, XK, BP		M or S
RTD **Cu 10**, Ni120; Pt100 (392); Pt100 (JIS); Pt100, 200, 500, 1000 (385)		M or S
Pressure (requires Fluke 700PXX Modules)	M	M used as S
Frequency; 10 kHz; **(15 KHz)**		M or S

M = Measure S = Source/Simulate
Unique 726 features are **in bold**
725Ex: ATEX certified
(Ex ATEX II IG EEX 1a IIB 171°C)

Specifications

Unique 726 features are **in bold**

Function Measure or Source	Range or Type	Resolution	Accuracy	Notes
Voltage	0 to 100 mV 0 to 10V (source) **0 to 20 V (source)** 0 to 30 V (measure)	0.01 mV 0.01V 0.01 V 0.01 V	**0.01%**, 0.02% Rdg + 2 LSD	Max load, 1 mA
mA	0 to 24	0.001 mA	**0.01%**; 0.02% Rdg + 2 LSD	Max load, 725/726: 1000K 725Ex: 500K
mV (TC terminals)	-10.00 mV to +75.00 mV	0.01 mV	**0.01%** 0.02% of range + 1 LSD	
Ohms	15K to 3200K **5K to 4000K**	0.01K to 0.1K	0.10K to 1.0K **0.015%**	
Hz - CPM	2.0 to 1000 CPM 1 to 1100 Hz 1.0 to 10.0 kHz **10.0 to 15.0 kHz**	0.1 CPM 1 Hz 0.1 kHz **0.1 kHz**	±0.05% ±0.05% ±0.25% **±0.05%**	Source; 5V p-p **1V - 20 V p-p** squarewave, -0.1 V offset
Loop Supply	725/726: 24 V DC 725Ex: 12 V DC	N/A	10%	
T/C	J, K, T, E, L, N, U, XK	0.1 °C, 0.1 °F	to 0.7 °C **to 0.2 °C**	
T/C	B, R, S, BP	1 °C, 1 °F	to 1.7 °C **to 1.2 °C**	
RTDs	**Cu (10)**, Ni120 (672) Pt 100, 200, 500, 1000 (385) Pt 100 (3916), Pt 100 (3926)	**0.01 °C**, **0.01 °F** 0.1 °C, 0.1 F	**to 0.15 °C** to 0.2 °C	

Maximum voltage: 30V
Operating temperature: 10°C to 55°C
Safety: CSA C22.2 No. 1010.1:1992
EMC: EN50082-1:1992 and EN55022: 1994 Class B

Size (HxWxD): 200 mm x 96 mm x 47 mm
Weight: 0.65 kg
Battery: Four AA alkaline batteries.
Battery life: 25 hours typical; battery door
Warranty 725, 726: Three years
Warranty 725Ex: One year

Included Accessories

TL75 Test Leads, AC72 Test Clips, one pair of stackable test leads, user's Manuals on CD-ROM (725Ex also includes CCD control drawing, Statement of Quality Assurance Practices, NIST Traceable calibration certificate)

Ordering Information

Fluke 725	Multifunction Process Calibrator
Fluke 725Ex	Intrinsically Safe Multifunction Process Calibrator
Fluke 726	Precision Multifunction Process Calibrator

Recommended Accessories

(Not for hazardous zones)

C125
See page 106

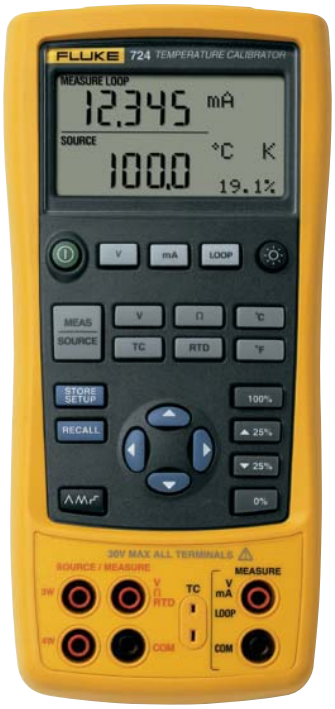
TL220
See page 100

80PK-27
See page 104

TPAK
See page 109

700P27
See page 94

724 Temperature Calibrator



Fluke 724

The temperature solution

The Fluke 724 Temperature Calibrator is a powerful yet easy-to-use calibrator. Use the measure and source functions to test and calibrate almost any temperature instrument.

- Easy to read dual display lets you view input and output simultaneously
- Measure RTDs, thermocouples, ohms, and volts to test sensors and transmitters
- Source/simulate thermocouples, RTDs, volts, and ohms to calibrate transmitters
- Perform fast linearity tests with 25% and 100% steps
- Execute remote tests with auto step and auto ramp
- Power transmitters during test using loop power supply with simultaneous mA measurement
- Store frequently-used test setups for later use

Features

Simultaneous Function Capability	Channel A	Channel B
24.000 mA DC	M	
24.000 mA DC with 24V loop supply	M	
100.00 mV DC		M or S
30.000V DC Measure	M	
20.000V DC Measure 10.000V DC Source		M or S
0 to 3200 Ohms		M or S
Thermocouple J, K, T, E, R, S, B, L, U, N		M or S
RTD Ni120; Pt100 (3926); Pt100 (JIS); Pt100, 200, 500, 1000 (385)		M or S

M = Measure S = Source/Simulate

Specifications

Function Measure or Source	Range	Resolution	Accuracy	Notes
Voltage	0 to 100 mV 0 to 10V (source) 0 to 30V (measure)	0.01 mV 0.001V 0.001V	0.02% Rdg + 2 LSD	Max load, 1 mA
mA (measure)	0 to 24	0.001 mA	0.02% Rdg + 2 LSD	Max load, 1000K
mV	-10.00 mV to +75.00 mV	0.01 mV	0.025% + of range + 1 LSD	
Resistance	0K to 3200K (measure) 15K to 3200K (source)	0.01K to 0.1K	0.10K to 1.0K	
Loop Supply	24V dc	N/A	10%	
Thermocouples	J,K,T,E,L,N,U	0.1°C	to 0.7°C	
Thermocouples	B,R,S	1°C	to 1.4°C	
RTDs	Ni120 (672) Pt 100, 200, 500, 1000 (385) Pt 100 (3916) Pt 100 (3926)	0.1°C	to 0.2° C	

Maximum voltage: 30V
Operating temperature: -10°C to 55°C
Safety: CSA C22.2 No. 1010.1:1992
EMC: EN50082-1:1992 and EN55022: 1994 Class B

Size (HxWxD): 200 mm x 96 mm x 47 mm
Weight: 0.65 kg
Battery: Four AA alkaline batteries
Battery life: 25 hours typical; battery door
Three Year Warranty

Included Accessories

TL75 Test Leads, AC72 Test Clips, one pair of stackable test leads.

Ordering Information

Fluke 724 Temperature Calibrator

Recommended Accessories

C25
See page 106

TL220
See page 100

TL81A
See page 99

80PK-25
See page 104

80PK-3A
See page 104

712/714 Temperature Calibrators

FLUKE ®

Fluke 714

Fluke 712

The clear choice

The Fluke 710 Series Process Calibrators offer clear new choices in single-function calibrators. Whatever you want to measure – temperature, pressure or basic electrical parameters – you'll find one of these easy-to-carry handheld tools gives you exactly the functions you need. They combine the rugged, ready-for-action package of the proven Fluke 80 Series DMMs with the easy-to-use pushbutton operation of the multifunction Fluke 740 Series Documenting Process Calibrators. These calibrators are EMI tolerant, dust and splash resistant, and have a removable battery door for quick battery changes.

712 RTD Calibrator

- Measure temperature from RTD output
- Simulate RTD output
- Rosemount pulsed RTD transmitter compatible
- Operates with seven types of RTDs
- Measure additional RTDs using Ohms measurement function
- Simulate additional RTDs using Ohms source function
- °F or °C selectable
- Four shrouded banana jacks

714 Thermocouple Calibrator

- Measure temperature from TC output
- Simulate TC output
- Operable with nine types of thermocouples
- Calibrate linear TC transmitter with mV source function
- Selectable °F or °C
- Thermocouple mini-jack termination
- Available as accessories; Fluke 700 TC1 and TC2 Thermocouple Mini-plug Kits

Specifications

Model	Function	Range	Resolution	Accuracy	Notes
Fluke 712	Measure/simulate RTD	-200 to 800°C (Pt 100)	0.1°C, 0.1°F	0.33°C, 0.6°F (Pt 100)	Pt; 100 200 500 1000 (385); Pt 100 (3926); Pt 100 (3916) JIS; Ni 120 (672)
	Measure/simulate Resistance	15 K to 3200 K	0.1 K	0.1 K to 1 K	
Fluke 714	Measure/ simulate Thermocouple	-200 to 1800°C, depending on type (K, -200 to 1370°C)	0.1°C or °F (1°C or °F; BRS)	0.3°C to 10 µV	9 TC types: J K T E R S B per NIST 175 and ITS-90, L U per DIN 43710 and IPTS-68
	Measure/ simulate mV	-10 to 75 mV	0.01 mV	0.025% + 1 count	

Maximum voltage: 30 V
Operating temperature: -10°C to 55°C
Safety: CSA C22.2 No. 1010.1:1992
EMC: EN50082-1:1992 and EN55022: 1994 Class B
712/714:
Size (HxWxD): 201mm x 98 mm x 52 mm
Weight: 0.6kg
Battery: 9V alkaline
Battery Life: 4 to 20 hours, typical, depending on functions used
Three Year Warranty

Included Accessories

Yellow Holster (H80M excl. TPAK), TL75 Test Leads and AC72 Alligator Clips (excluding model 714), single 9V alkaline battery and Instruction Sheet (14 languages)

Ordering Information

Fluke 712 RTD Calibrator
Fluke 714 Thermocouple Calibrator

Recommended Accessories

C25
See page 106

C550
See page 106

TL970
See page 99

TL220 (714)
See page 100

80PK-24 (714)
See page 104

9140 Series Field Metrology Wells
4180 Series Infrared Calibrators

FLUKE®

New

Fluke 9142/9143/9144

Fluke 4180/4181

Field Metrology Wells and infrared calibration targets

9142, 9143, 9144
Field temperature calibration with precision and speed

The Fluke 9140 series Field Metrology Wells extend high performance portable temperature calibration to the industrial process environment by maximizing portability, speed, and functionality with little compromise to metrology performance.

Offering a broad temperature covered by three models you can easily cover varied contact temperature probe workloads between -25 °C to 660 °C.

They are quick to reach temperature set points, yet they are stable, uniform, and accurate. These industrial temperature calibrators are perfect for performing transmitter loop calibrations, comparison calibrations, or simple checks of thermocouple sensors.

Adding the process option means there is no need to carry additional tools into the field. The optional built-in two-channel readout measures resistance, voltage, and 4–20 mA current with 24V loop power.

- Lightweight, portable, and fast
- Cool to –25 °C in 15 minutes and heat to 660 °C in 15 minutes
- Built-in two-channel readout for PRT, RTD, thermocouple, 4-20 mA current
- On-board automation and documentation
- Metrology performance in accuracy, stability, uniformity, and loading

4180/4181 IR Calibrators
True metrology solution for infrared Calibration

Now it's easy to increase your IR temperature measurement accuracy in the lab or the field with the new 4180/81 Precision Infrared Calibrators from Fluke's Hart Scientific division.

Their accredited calibrations from Hart's IR laboratory help to ensure traceable, consistent measurements accurate to +0.25 °C. Select from eight preconfigured Fluke thermometer settings or set up your own.

The large 152 mm (6 inch) target helps eliminate errors. So whether you're measuring from -15 °C to 120 °C (4180) or from 35 °C to 500 °C (4181) you'll get a 4:1 TUR.

- High performance, designed for industrial use
- Guaranteed accuracy specifications
- Excellent stability and uniformity
- Large 152 mm targets capture peripheral vision of IR thermometer
- Portability and speed for field use – including convenient bail handle
- Simulates individual IR thermometer emissivity settings
- No difficult infrared calculations
- Fluke and Raytek thermometer calibration points can be loaded directly into the calibrator for convenience
- Calibrated in accredited infrared laboratory by Hart Scientific, the experts in temperature calibration
- At least 4 times more accurate than most IR thermometers
- Calibration includes uncertainties from surface heat loss and emissivity

Included Accessories

914x: 9930 Interface-*it* Software, Report of Calibration, Test leads (P Version Only), 6-pin DIN Connector for Reference Probe (P Version Only)

Ordering Information

Fluke 4180	Precision Infrared Calibrator, –15 °C to 120 °C
Fluke 4181	Precision Infrared Calibrator, 35 °C to 500 °C
Fluke 4180-CASE	Carrying Case, 4180, 4181
Fluke 4180-DCAS	Carrying Case with wheels, 4180, 4181
Fluke 9142-X	Field Metrology Well, Low Temp
Fluke 9143-X	Field Metrology Well, Mid Temp
Fluke 9144-X	Field Metrology Well, High Temp

Add -P to order optional Process option (914X-X-P). X represents insert type, A, B, C, D, E or F

Specifications

	9142	9143	9144	4180	4181
Temp Range	–25 °C to 150 °C	33 °C to 350 °C	50 °C to 660 °C	–15 °C to 120 °C	35 °C to 500 °C
Stability	±0.1 °C Full Range	±0.02 °C at 33 °C ±0.02 °C at 200 °C ±0.03 °C at 350 °C	±0.03 °C at 50 °C ±0.04 °C at 420 °C ±0.05 °C at 660 °C	±0.05 °C at 0 °C	±0.2 °C at 250 °C
Uniformity	±0.01 °C Full Range	±0.01 °C at 33 °C ±0.015 °C at 200 °C ±0.02 °C at 350 °C	±0.02 °C at 50 °C ±0.05 °C at 420 °C ±0.15 °C at 660 °C	±0.1 °C at 0 °C	±0.1 °C at 35 °C
Target Size	N/A	N/A	N/A	152.4 mm diameter	152.4 mm diameter
Emissivity Range	N/A	N/A	N/A	Preset to 0.95	Preset to 0.95
NIST Accredited Calibration	YES	YES	YES	YES	YES

9142/9143/9144:
Size (HxWxD): 290 x 185 x 295 mm
Weight: 9142: 8.2 kg, 9143: 7.3 kg, 9144: 7.7 kg
One Year Warranty

4180/4181
Size (HxWxD): 241 x 356 x 241 mm
Weight: 4180: 9.1 kg, 4181: 9.5 kg
One Year Warranty

For the complete line of Fluke heat sources check the Fluke web at www.fluke.eu

717/718/718Ex Pressure Calibrators

FLUKE®

Fluke 718

Fluke 718Ex

Fluke 717

Pump up the pressure

717 pressure Calibrators

- Measure pressure, 0.05% of full scale with internal sensor
  - 1/8 NPT pressure fitting
  - Compatible with non-corrosive gasses and liquids
- Pressure measurement to 700 bar using any of the Fluke-700Pxx Pressure Modules
- Wide range of selectable measurement units for pressure
- Current measurement with 0.015% accuracy and 0.001mA resolution
- Simultaneous pressure and current measurement for easy p/I or I/p testing
- 24 volt loop power supply
- Zero, Min-Max, Hold and Damping functions
- Pressure switch test captures set, reset and deadband values

718 Pressure Calibrators

- Same features as Fluke 717 plus
- Newly designed built-in pressure/vacuum hand pump with vernier and bleed valve helps protect the pump from damage and is easier to clean

718Ex 30G and 100G Intrinsically Safe Pressure Calibrator

- Same features as Fluke 718 (excl. loop supply)
- For use in explosion endangered areas
- ATEX certified (Ex II 1G EEx ia IIC T4)
- Compatible with eight intrinsically safe pressure modules

Specifications

Model	Range	Resolution	Over Pressure
718 1G	-68.9 mbar to 68.9 mbar	0.001 mbar	Over Pressure 5xFS
718 30G	-850 mbar to 2 bar	0.1 mbar	Over Pressure 2xFS
718 100G	-850 mbar to 7 bar	0.1 mbar	Over Pressure 2xFS
718 300G	-850 mbar to 20 bar	1 mbar	Over Pressure 375 PSI, 25 bar
717 1G	-68.9 mbar to 68.9 mbar	0.001 mbar	Over Pressure 5xFS
717 30G	-850 mbar to 2 bar	0.1 mbar	Over Pressure 2xFS
717 100G	-850 mbar to 7 bar	0.1 mbar	Over Pressure 2xFS
717 300G	-850 mbar to 20 bar	1 mbar	Over Pressure 375 PSI, 25 bar
717 500G	0 mbar to 34.5 bar	1 mbar	Over Pressure 2xFS
717 1000G	0 mbar to 69 bar	1 mbar	Over Pressure 2xFS
717 1500G	0 bar to 103.4 bar	0.01 bar	Over Pressure 2xFS
717 3000G	0 bar to 207 bar	0.01 bar	Over Pressure 2xFS
717 5000G	0 bar to 345 bar	0.01 bar	Over Pressure 2xFS

For Fluke 717/718 models: Supported Pressure Units; psi, in. H_2O(4°C), in. H_2O(20°C), cm H_2O(4°C), cm H_2O(20°C), bar mBar, kPa, inHg, mmHg, kg/cm^2
Functions: Zero, Min, Max, Hold, Damp functions
Max. Voltage: 30 V
Operating temperature: -10°C to 55°C
Safety: CSA C22.2 No. 1010.1:1992
EMC: EN50082-1:1992 and EN55022:1994 Class B
Fluke 717: For use with non corrosive gasses and liquids
Fluke 718: For use with non corrosive gasses

717
Size (HxWxD): 201 mm x 98 mm x 52 mm
Weight: 0.6 kg
Warranty: Three years

718/718Ex
Size (HxWxD): 216 mm x 94 mm x 66 mm
Weight: 0.992 kg
Warranty 718: Three years
Warranty 718Ex: One year

Included Accessories

Fluke 717: Yellow Holster (H80M excl. TPAK), TL75 Test Leads and AC72 Alligator Clips, Single 9V alkaline battery (two 9V batteries in 718), Instructions. *718/718Ex:* 718: Yellow Holster, 718Ex: Red Ex Holster, TL75 Test Leads and AC72 Alligator Clips, two 9V batteries, user manual on CD-ROM.

Ordering Information

Fluke 718 1G	Pressure Calibrator
Fluke 718 30G	Pressure Calibrator
Fluke 718 100G	Pressure Calibrator
Fluke 718 300G	Pressure Calibrator
Fluke 718Ex 30G	Intrinsically Safe Pressure Calibrator
Fluke 718Ex 100G	Intrinsically Safe Pressure Calibrator
Fluke 717 1G	Pressure Calibrator
Fluke 717 30G	Pressure Calibrator
Fluke 717 100G	Pressure Calibrator
Fluke 717 300G	Pressure Calibrator
Fluke 717 500G	Pressure Calibrator
Fluke 717 1000G	Pressure Calibrator
Fluke 717 1500G	Pressure Calibrator
Fluke 717 3000G	Pressure Calibrator
Fluke 717 5000G	Pressure Calibrator

Recommended Accessories

(Not for hazardous zones)

C43 (718)
See page 106

C125 (717)
See page 106

TL220
See page 100

700P27
See page 94

700LTP-1
See page 94

705/707/707Ex/715 Loop Calibrators

FLUKE®

Fluke 705

Fluke 715

Fluke 707

Fluke 707Ex

4-20 mA, source, measure, simulate

705 Loop Calibrator

- Simultaneous mA and %
- mA accuracy of 0.02%
- Measure, source and simulate mA
- Push button 25% steps for fast, easy linearity checks
- "Span Check" for fast confirmation of zero and span
- Selectable slow ramp, fast ramp, and step function
- 24 volt internal loop supply
- 0 – 20 mA or 4 – 20 mA default start up modes

707 Loop Calibrator

- Features of the Fluke 705
- "Quick Click" detented rotary knob for one handed operation
- Higher accuracy: 0.015%
- Mains Voltage Input protection
- 250 Ohm loop resistance for with Hart instrumentation

715 Volt/mA Calibrator

- Measure loop current (0–20 mA, 4–20 mA) signals with 0.015% accuracy and 0.001 mA resolution
- Measure voltage output process signals from PLCs, transmitters
- Source or simulate 24 mA loop current
- Source voltage to 100 mV or 10V
- 24V loop supply with simultaneous current measurement

707Ex Intrinsically Safe Loop Calibrator

- Same features as Fluke 707
- For use in explosion endangered areas
- ATEX certified (Ex II 2 G Eex ia IIC T4)

Specifications

Functions Voltage measurement	705/707/707 Ex	715
Range	0–28 V DC	0–200 mV, 0–20 V
Resolution	1 mV	10 µV 1 mV
Accuracy	705: 0.025% Rdg + 2 LSD 707/707Ex: 0.015% Rdg + 2 LSD	0.01% Rdg + 2 LSD
Current measurement		
Range	0–24 mA	0–24 mA
Resolution	0.001 mA	0.001 mA
Accuracy	705: 0.025% Rdg + 2 LSD 707/707Ex: 0.015% Rdg + 2 LSD	0.015%
Current sourcing		
Range	0–20 mA or 4–20 mA[1]	0–20 mA or 4–20 mA[1]
Accuracy	705: 0.025% Rdg + 2 LSD 707/707Ex: 0.015% Rdg + 2 LSD	0.015% + 2 LSD
Drive capability	705: 1000 K @ 24 mA 707: 1200 K @ 24 mA 707Ex: 700 K @ 20 mA	1000 K @ 24 mA
Loop power while measuring mA	24 V	24 V
Voltage sourcing	N/A	0–100 mV or 0–10 V
Display current and % of span	Yes	mA or %
Auto step, auto ramp	Yes	Yes
Span Check	Yes	Yes

[1] will over-range to 24 mA

Fluke 705, 707, 707Ex

Maximum voltage: 30 V (28 V – 707Ex)
Operating temperature: -10 to 55°C
Safety: CSA C22.2 No. 1010.1: 1992
EMC: EN50082-1:1992 and EN55022: 1994 Class B
Size (HxWxD): 164 mm x 75 mm x 47 mm;
Weight: 0.35 kg
Battery: One 9 V alkaline
Battery life: 18 hours typical, at 12 mA
Warranty: Three years (one year, 707Ex)

715

Size (HxWxD): 201 mm x 98 mm x 52 mm
Weight: 0.6 kg
Battery: One 9V alkaline
Battery life: 4 to 20 hours
Warranty: Three years

Included Accessories

Fluke 705/707: C10 Yellow Holster, TL75 Test Leads, AC72 Alligator Clips, Single 9V alkaline battery, Instruction Sheet
Fluke 707Ex: Red Ex-holster, Fluke TL75 Test Leads, AC72 Alligator Clips, Single 9V alkaline battery, Instruction Sheet
Fluke 715: Yellow Holster (H80M excl. TPAK), TL75 Test Leads and AC72 Alligator Clips, Single 9V alkaline battery, Instruction Sheet

Ordering Information

Fluke 705	Loop Calibrator
Fluke 707	Loop Calibrator
Fluke 707Ex	Intrinsically Safe Loop Calibrator
Fluke 715	Volt/mA Calibrator

Recommended Accessories

(Not for hazardous zones)

C12A (705/707)
See page 106

C25 (715)
See page 106

TL220
See page 100

TP920
See page 99

TPAK (715)
See page 109

771 mA Process Clamp Meter

FLUKE ®

Fluke 771

The Fluke 771 is the latest innovative approach to measuring mA loop signals.

With the Fluke 771 you no longer need to lift a wire from a terminal (break the loop) to measure 4–20 mA which has a direct impact on your maintenance time. With the Fluke 771 there is no need to call a control room to override the control of a process loop when breaking the loop and you save time when testing analog I/O on a PLC if you do not need to check measurements on a console. In addition, the Fluke 771 can have another impact on your overall cost by eliminating catastrophic plant outage caused by accidentally opening a critical loop.

Measure 4–20 mA signals without breaking the loop

- Measure mA signals for PLC and control system analog I/O
- Measure 4–20 mA output signals from transmitters without breaking the loop
- Best in class 0.2% accuracy
- Resolution and sensitivity to 0.01 mA
- Hold function captures and displays changing measurements
- Dual backlit display with both mA measurement and percent of 4–20 mA span
- Measurement Spotlight illuminates hard to see wires in dark enclosures
- Detachable clamp with extension cable for measurements in tight locations
- Measure 10–50 mA signals in older control systems using the 99.9 mA range
- Automatic battery savings features
  - Power, 15 minutes automatic power down
  - Backlight, 2 minutes, automatic off
  - Spotlight, 2 minutes, automatic off

Automatic battery saving features can be disabled if desired.

Specifications

Function	Range	Resolution	Accuracy	Features
Measuring and troubleshooting 4–20 mA signals	–20.99 to +20.99 mA	0.01 mA	0.2% or reading + 5 counts	Zero, Hold, backlight, measurement spotlight
Measuring and troubleshooting 10–50 mA signals	–21.0 to –99.9 mA +21.0 to +99.9 mA	0.1 mA	1% reading + 5 counts	Zero, Hold, backlight, measurement spotlight

Operating Temperature: –10 to 55 °C
Storage Temperature: –25 to 70 °C
Operating Humidity: < 95% @ <30 °C, < 75% @ 30 to 55 °C
Operating Altitude: 0 to 2000 m
IP Rating: IP 40
Size (HxWxD): 212 mm x 59 mm x 38 mm
Weight: 0.26 kg

Vibration: Random 2g, 5 to 500 Hz
Shock: 1 meter drop test (except the jaw)
Safety: EMI, RFI, EMC – Meets EN61326-1
Temperature Coefficients: 0.01% / °C
Battery: AA 1.5 V Alkaline (2), IEC LR6
Battery Life: 20 hours typical
Warranty: Three-years, electronics, 1-year for clamp cable assembly

Included Accessories

Soft carrying case, users manual

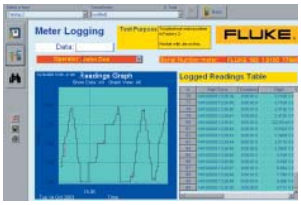
Ordering Information

Fluke 771 Milliamp Process Clamp Meter

787/789 ProcessMeters

Fluke 787

Fluke 789



Double your power

The Fluke 787 and 789 ProcessMeters combine a Digital Multimeter and a Loop Calibrator in one rugged handheld tool, giving process technicians double the power. The Fluke 789 has a built-in 24 V loop supply which reduces the need for taking a separate power supply when doing offline transmitter testing. The IR communication port of the Fluke 789 allows data to be logged to optional FlukeView Software for graphical analysis and reporting.

Features

	787	789
DMM and Loop Calibrator in one tool	●	●
Precision 1000 V, 440 mA True RMS Digital Multimeter	●	●
DC current source and Loop Calibrator	●	●
24 V Loop power supply		●
Min/Max / Average / Hold / Relative Modes	●	●
Diode Test and Continuity Beeper	●	●
Manual Step (100%, 25%, Coarse, Fine) plus Auto Step and Auto Ramp	●	●
Simultaneous mA and % of scale read-out	●	●
Externally accessible battery / fuses	●/-	●/●
HART mode setting with loop power and a built-in 250 K resistor		●
0% and 100% buttons to toggle between 4 and 20 mA sourcing for a quick span check		●
Infrared I/O serial port		●

Specifications

	787		789	
Voltage measurements				
Range	0–1000 V AC or DC		0–1000 V AC or DC	
Resolution	0.1 mV to 1.0 V		0.1 mV to 1.0 V	
Accuracy	0.1% Rdg+1 LSD (V DC)		0.1% Rdg+1 LSD (V DC)	
Current measurement				
Range	0–1 A	0–30 mA	0–1 A	0–30 mA
Resolution	1 mA	0.001 mA	1 mA	0.001 mA
Accuracy	0.2%+2 LSD	0.05%+2 LSD	0.2%+2 LSD	0.05%+2 LSD
Current Sourcing				
Range	0–20 mA or 4–24 mA		0–20 mA or 4–24 mA	
Accuracy	0.05% of span		0.05% of span	
Other specifications				
Max drive capability	500 K		1200 K	
Loop power	N/A		24 V	
Resistance measurement	To 40 MK, 0.2%+1 LSD		To 40 MK, 0.2%+1 LSD	
Frequency	To 19.999 kHz, 0.005%+1 LSD		To 19.999 kHz, 0.005%+ LSD	
Continuity	Beeps for resistance < 100 K		Beeps for resistance < 100 K	
Span Check	No		Yes	

Maximum voltage: 1000 V
Operating temperature: -20 to 55°C

787
Size (HxWxD): 201 mm x 98 mm x 52 mm
Weight: 0.642 kg
Battery: One 9 V alkaline
Battery life: 12 to 50 hours typical
Warranty: Three years

789
Size (HxWxD): 203 mm x 100 mm x 50 mm
Weight: 0.6 kg
Battery: Four AA alkaline batteries
Battery life: 14 to 140 hours typical
Warranty: Three years

Included Accessories

787: Yellow Holster (H80M excl. TPAK), TL75 Hard Point Test Lead Set plus AC72 Alligator Clips, one 9V battery, user manual
789: TL71 Test Lead Set plus AC72 Alligator Clips, four 9V AA alkaline batteries, user manual and quick reference guide.

Ordering Information

Fluke 787 ProcessMeter
Fluke 789 ProcessMeter
FVF-SC2 FlukeView Forms Software including interface cable

Recommended Accessories

C125
See page 106

TL220
See page 100

80T-150U
See page 104

i400
See page 102

i410
See page 103

Field Calibrator Accessories

FLUKE®

Fluke 700 Series Pressure Modules

- Ranges from 2.5 mbar to 700 bar.
- Gage, differential, dual (compound), absolute and vacuum modules
- Very high accuracy: up to 0.025% FS
- Full-accuracy performance for 0°C to 50°C
- Pressure readings update twice per second, and may be displayed in up to 11 different units
- Compatible with Fluke 717, 718, 725 and 74x series.
- Rugged cases protect the modules from harsh environments
- All modules include NIST traceable certificate and test data
- ATEX certified Ex versions available (Ex II 1 Eex ia IIB T4)

Model		Range (approx.)	Resolution uncertainty (23 ± 3°C) (FS)	Reference	High side media	Low side media	Fitting material	Max overpressure[2]
Differential								
700P00		2.5 mbar	0.001 mbar	0.3 %	Dry [1]	Dry	316 SS	30x
700P01/700P01Ex	Ex	25 mbar	0.01 mbar	0.2 %	Dry	Dry	316 SS	3x
700P02		70 mbar	0.007 mbar	0.15 %	Dry	Dry	316 SS	3x
700P22		70 mbar	0.007 mbar	0.1 %	316 SS	Dry	316 SS	3x
700P03		340 mbar	0.01 mbar	0.05 %	Dry	Dry	316 SS	3x
700P23		340 mbar	0.01 mbar	0.025 %	316 SS	Dry	316 SS	3x
700P04		1000 mbar	0.1 mbar	0.025 %	Dry	Dry	316 SS	3x
700P24/700P24Ex	Ex	1001 mbar	0.1 mbar	0.025 %	316 SS	Dry	316 SS	3x
Gage								
700P05/700P05Ex	Ex	2 bar	0.1 mbar	0.025 %	316 SS	N/A	316 SS	3x
700P06/700P06Ex	Ex	7 bar	0.7 mbar	0.025 %	316 SS	N/A	316 SS	3x
700P27/700P27Ex	Ex	20 bar	1 mbar	0.025 %	316 SS	N/A	316 SS	3x
700P07		34 bar	1 mbar	0.025 %	316 SS	N/A	316 SS	3x
700P08		70 bar	7 mbar	0.025 %	316 SS	N/A	316 SS	3x
700P09/700P09Ex	Ex	100 bar	10 mbar	0.025 %	316 SS	N/A	316 SS	2x
Absolute								
700PA3		340 mbar	0.01 mbar	0.05 %	316 SS	N/A	316 SS	3x
700PA4/700PA4Ex	Ex	1000 mbar	0.1 mbar	0.05 %	316 SS	N/A	316 SS	3x
700PA5		2 bar	0.1 mbar	0.05 %	316 SS	N/A	316 SS	3x
700PA6		7 bar	0.7 mbar	0.05 %	316 SS	N/A	316 SS	3x
Vacuum								
700PV3		-340 mbar	0.01 mbar	0.04 %	316 SS	Dry	316 SS	3x
700PV4		-1000 mbar	0.1 mbar	0.04 %	316 SS	Dry	316 SS	3x
Dual								
700PD2		± 70 mbar	0.007 mbar	0.15 %	316 SS	Dry	316 SS	3x
700PD3		± 340 mbar	0.01 mbar	0.04 %	316 SS	Dry	316 SS	3x
700PD4		±1000 mbar	0.1 mbar	0.025 %	316 SS	Dry	316 SS	3x
700PD5		-1000/+2000 mbar	0.1 mbar	0.025 %	316 SS	N/A	316 SS	3x
700PD6		-1000 mbar/+6.9 bar	1 mbar	0.025 %	316 SS	N/A	316 SS	3x
700PD7		-1000 mbar/+13.8 bar	1 mbar	0.04 %	316 SS	N/A	316 SS	3x
High								
700P29/700P29Ex	Ex	200 bar	0.01 bar	0.05 %	C276	N/A	C276	2x
700P30		340 bar	0.01 bar	0.05 %	C276	N/A	C276	2x
700P31		700 bar	0.07 bar	0.05 %	C276	N/A	C276	1.5x

1) "Dry" indicates dry air or non-corrosive gas as compatible media. "316 S S" indicates media compatible with Type 316 Stainless Steel. "C276" indicates media compatible with Hastelloy C276.
2) Maximum overpressure specification includes common mode pressure.

Other accessories

Fluke 700LTP-1

Fluke 700PTP-1

700LTP-1 Low-pressure Test Pump
- For low pressure applications
- Vacuum to -13 psi / -.90 bar
- Pressure to 100 psi / 6.9 bar
- With fine-control, adjustable relief valve and slow bleed capability

700PTP-1 Pneumatic Test Pump-1
- Handheld pressure pump
- Pressures up to 600 psi, 40 bar

700HTP-1 Hydraulic Test Pump
- Pressures up to 10,000 psi/690 bar.

700PRV-1 Pressure Relief Valve
- Pressure relief valve for 700HTP-1
- Settable from 725 to 5800 PSI (50 to 200 bar)

700HTH-1 Hydraulic Test Hose
- Hydraulic test hose is a 10,000 psi, 690 bar

700ILF In-Line Filter for the Fluke 718

700PCK Pressure Module Calibration Kit

BP7235 NiMH Battery Pack

BE9005 Battery Eliminator

ATEX Certified Test Tools

The Fluke line of intrinsically safe tools is designed to meet the needs of technicians working in and around hazardous areas. The tools are ideal for environments in chemical plants, petro-chemical plants, oil platforms, refineries and other locations where risk of explosion exists. The products are easily recognizable from standard Fluke products by their lighter grey colour and red holster.

A brief look at ATEX

Intrinsic safety is a protection standard employed in potentially explosive atmospheres. Devices that are certified as "intrinsically safe" are designed to be unable to release sufficient energy, by either thermal or electrical means, to cause ignition of flammable material (gas, dust/-particulates).

What is "Intrinsically Safe"?

Intrinsically safe standards apply to all equipment that can create one or more of a range of defined potential explosion sources:

- Electrical sparks
- Electrical arcs
- Flames
- Hot surfaces
- Static electricity
- Electromagnetic radiation
- Chemical reactions
- Mechanical impact
- Mechanical friction
- Compression ignition
- Acoustic energy
- Ionizing radiation

What industries are intrinsically safe products designed for?

- Petro-chemical
- Oil platforms and refineries
- Pharmaceutical
- Bulk materials (e.g. grain)
- Mining
- Pipelines
- Any environment where explosive gases are present

What is ATEX?

The primary intrinsically safe standard has been set in the European Union with the 9/94/EC Directive, commonly called ATEX ("Atmosphères Explosibles," French for explosive atmospheres). The stated goal of the guidelines is to "help ensure the free movement of products in the European Union" by "minimizing the number of safeguard clause applications, at least those originating from divergent interpretations The ATEX rules have been in place as a voluntary standard since 1 March 1996. The rules are mandatory on electrical and electronic equipment for use in environments subject to explosion hazard sold in the EU starting 1 July 2003. From this date onwards, all products sold for use in explosive atmospheres must have ATEX certification and carry the distinctive symbol: Ex

The Fluke Ex (IS) product line

Fluke is among the first manufacturers to produce handheld test tools according to the latest ATEX standards. The Fluke line of intrinsically safe tools is designed to meet the needs of technicians working in and around hazardous areas:

- Install, maintain and troubleshoot equipment by using the new Fluke 87V Ex Digital Multimeter
- Maintain and calibrate sensors, transmitters and control loops with the line of Ex field calibrators

The tools are ideal for environments in petro-chemical plants, oil platforms, refineries and other locations subject to risk of explosion.
Apart from having the ATEX markings, the visual difference between a standard Fluke tool and the corresponding Ex version is the different grey body colour and a red, conductive holster designed specifically to eliminate the potential for electrical discharge.
Inside, the Fluke Ex tools have been reengineered to reduce energy avoiding generation of heat and electrical sparks. They are premium products designed for ultimate safety.

Making sense of ATEX certification

Fluke 707Ex is ATEX-compliant and is certified Ex II 2 G EEx ia IIC T4— but what exactly does that mean?

Here a brief explanation of the ATEX certification designations.

ATEX certification 707Ex	
Ex	The ATEX examination mark. This sign is required on all devices used in European hazardous areas.
II 2 G	The classification of zones. "II" designates the tool is approved for all non-mining areas. "2" represents the category of the device, in this case the device is rated for the second most hazardous areas. "G" designates atmosphere, in this case gas, vapors and mist.
EEx	Explosion protection based on European Ex-regulations.
ia	The type of protection from explosion, in this case the energy in a device or connector has been reduced to a safe value.
IIC	Gas Group. "IIC" indicates compatibility with the most dangerous gas group.
T4	Temperature class gives the user the maximum temperature of a surface that may be in contact to the Ex atmosphere under fault conditions. T4 is rated at 135°C.

ATEX-certified Test Tools

Fluke intrinsically safe tools for tough measurement and calibration tasks

Fluke 87V Ex

Fluke 87V Ex Intrinsically safe version of the world's most popular multimeter

With its high performance, accuracy and motor drive compatibility, the Fluke 87V is the most popular industrial multimeter around. Now Fluke has introduced a new intrinsically safe version – the 87V Ex – for measurements in and around hazardous areas.
The Fluke 87V Ex has all the measurement and troubleshooting functions of the proven Fluke 87V. Unlike other ATEX-certified tools, it can be used both inside and outside the hazardous zone (ATEX Zones 1 & 2) without compromising performance or compliance. So there's no need to carry different tools for use in specific zones. It also has a built-in thermometer with TC probe, further reducing technicians' tool counts.

- ATEX safety rating II 2G EEx ia IIC T4
- EN61010-1 CAT III 1000V/CAT IV 600V electrical safety rating

See also page 14

Fluke 725Ex

Fluke 725Ex Intrinsically safe Multifunction Process Calibrator

The Fluke 725Ex intrinsically safe Multifunction Process Calibrator is powerful yet easy-to-use. Combined with the Fluke 700PEx Pressure Modules, the 725Ex is able to calibrate almost any process instrument likely to need service in any area where explosive gases may be present.

- ATEX safety rating II IG EEx ia IIB 171°C

See also page 86

Fluke 707Ex

Fluke 707Ex Fast, one-handed tool for loop checks

The Fluke 707Ex is the ideal, stand alone tool for calibration and maintenance of 4 to 20 mA control loops. It provides 24V loop power while measuring mA, and lets you measure and source/simulate mA with 1 µA resolution.

- ATEX safety rating II 2G EEx ia IIC T4

See also page 91

Fluke 718Ex

Fluke 718Ex Self-contained Pressure Calibrator

The Fluke 718Ex offers a convenient, self contained solution for pressure measurements and calibration. With its internal pressure sensor and pump, it's ready for immediate, stand alone use. The pressure range can easily be extended to up to 200 bar with any of the 8 Fluke 700PEx Pressure Modules.

- ATEX safety rating II IG EEx ia IIC T4

See also page 90

Fluke 700Ex

Fluke 700Ex Pressure Modules

These intrinsically safe pressure modules for use with the Fluke 725Ex Multifunctional Process Calibrator and Fluke 718Ex Pressure Calibrator cover the most commonly used pressure calibration ranges from 0-25 mbar and 0-200 bar.
There's a choice of 8 gage, differential and absolute modules.

- ATEX safety rating II 1G EEx ia IIC T4

See also page 94

General Accessories

The best test tools deserve accessories designed and manufactured to the same high quality and safety standards. So we also provide a comprehensive range of test leads, probes and clips, current clamps, temperature accessories and dedicated electronic and automotive accessories. And to protect your valuable instrument, choose a rugged Fluke tailor-made holster or case.

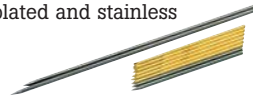
Electronic Test Leads, Probes & Clips

FLUKE®

Test Leads

TL910 Electronic Test Lead Set
- Very small 1 mm tips to access hard to reach test points
- Probe tip length up to 100 mm, test lead length: 1 m
- Included: 3 sets of spring loaded gold tips and 2 sets of stainless steel tips
- CAT IV 600 V, CAT III 1000 V, 3 A rating

TP912 Replacement Tips for TL910
- Replacement tips for TL910
- Five sets of gold plated and stainless steel tips



TL40 Retractable Tip Test Lead Set
- One pair (red, black) of test leads with sharp needle point tips adjustable to desired length from 0 to 76 mm
- Extra hard probe tips to provide long service life
- Flexible silicone insulated test leads
- CAT II 150 V, 3 A rating, UL listed

TL940 Mini-Hook Test Lead Set
- 1 pair (red, black) of test leads with multi-stacking 4 mm banana plugs and mini-hooks
- Mini-hooks attach to component leads up to 1.5 mm diameter
- 90 cm long PVC insulated leads
- 30 V rms or 60 V DC, 15 A

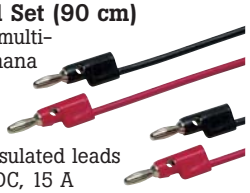
TL950 Mini-Pincer Test Lead Set
- 1 pair (red, black) of test leads with multi-stacking 4 mm banana plugs and mini-pincers
- Mini-pincers open to 2.3 mm
- 90 cm long PVC insulated leads
- 30 V rms or 60 V DC, 15 A

Test Leads / Patch Cords

TL960 Micro-Hook Test Lead Set
- 1 pair (red, black) of test leads with multi-stacking 4 mm banana plugs and micro-hooks
- Micro-hooks attach to component leads up to 1 mm diameter
- 90 cm long PVC insulated leads
- 30 V rms or 60 V DC, 15 A

TL930 Patch Cord Set (60 cm)
- 1 pair (red, black) multi-stacking 4 mm banana plug patch cords
- Nickel-plated banana plugs
- 61 cm long PVC insulated leads
- 30 V rms or 60 V DC, 15 A

TL932 Patch Cord Set (90 cm)
- 1 pair (red, black) multi-stacking 4 mm banana plug patch cords
- Nickel-plated banana plugs
- 90 cm long PVC insulated leads
- 30 V rms or 60 V DC, 15 A



TL935 Patch Cord Kit (60, 90, 120 cm)
- 3 sets (red and black pairs) of multi-stacking 4 mm banana plug patch cords
- Nickel-plated banana plugs
- 60 cm, 90 cm, 120 cm long PVC insulated leads
- 30 V rms or 60 V DC, 15 A

H900 Test Lead Holder
- Heavy duty construction with mounting holes
- Holder has 10 slots for wires up to 8 mm in diameter
- Over-all dimensions: 27.9 cm L x 8.9 cm W x 3.2 cm H

Kits

TL80A Basic Electronic Test Lead Kit
- One pair (red, black) each 1 meter long silicone test lead set, alligator clip and probe tip extender.
- C75 soft carrying case
- CAT II 300 V. UL listed

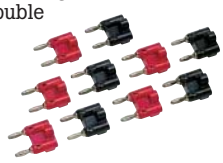
TP920 Test Probe Adapter Kit
- Set of push-on adapters for TL71 and TL75 test probes
- IC test adapters, extended probe tips, medium alligator clips (max.opening 7.6 mm)
- CAT II 300 V, 5 A rating

TL970 Hook and Pincer Kit
- TL940 Mini-Hook Test Lead Set
- TL950 Mini-Pincer Test Lead Set
- TL960 Micro-Hook Test Lead Set

TL81A Deluxe Electronic Test Lead Kit
- Includes components of TL80, plus one pair (red, black) each modular 1 meter long silicone test lead, test probe, hook-style and pinch style clip, alligator clip, IC probe tip adapter and spade lugs
- Quadfold soft carrying case
- CAT II 300 V. UL listed

TLK287 Electronic Master Test Lead Kit
- Includes modular leads, probes (black and red), minigrabber/jack set, medium alligator clips (black and red), spade lug/banana jack plated (set), couplers IEC1010 (black and red), micrograbbers and – leads (black and red)
- TL910 Electronic Test Lead Set
- Quadfold Pouch
- CAT III 1000 V (probes only)

BP980 Double Banana Plug Kit
- 5 pair (red, black) of double 4 mm banana plugs
- Each plug has 3.1 mm holes for mounting wires and components
- Brass plugs/jack, beryllium copper springs
- 30 V rms or 60 V DC, 15 A



Industrial Test Leads, Probes & Clips

FLUKE®

Test Leads

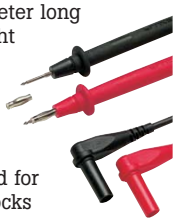
TL71 Premium Test Lead Set

- One pair (red, black) comfort grip probes with silicone insulated, right-angle test leads
- Recommended for µV measurements
- CAT IV 600 V, CAT III 1000 V, 10 A rating. UL listed

TL75 Hard Point™ Test Lead Set

- One pair (red, black) comfort grip probes with PVC insulated, test leads with right-angle shrouded banana plugs
- Recommended for general purpose measurements
- CAT IV 600 V, CAT III 1000 V, 10 A rating. UL listed

TL76 All-in-one Test Lead Set



- One pair (red, black) 1.5 meter long silicone test leads with right angle shrouded banana plug
- Lantern tip (removable) for use with European wall sockets (4 mm Ø)
- Lantern tip can be removed for easy access to terminal blocks (2 mm Ø)
- Removable, insulated IC caps allow probing on closely spaced leads and compliance with GS38.
- Cat IV 600 V, CAT III 1000 V, 10 A rating, UL listed

SureGrip™

CAT III 1000V
CAT IV 600V

SureGrip™ accessories are designed to improve steadiness in slippery hands. Rubber overmolded surfaces and finger-hugging curves give the user a comfortable, reliable grip on the accessory so they can focus on making an accurate measurement.

Modular Test Leads

TL221 SureGrip™ Extension Lead Set

- One pair (red, black) of silicone insulated leads with straight connectors on both ends
- Reinforced strain relief
- Includes one pair (red, black) of female couplers
- Extends test leads by 1.5 m
- 600 V CAT IV, 1000 V CAT III, 10 A rating. UL listed

TL222 SureGrip™ Silicone Test Lead Set

- DMM test leads (red, black) with safety shrouded, standard diameter banana plugs
- Right angle connector on both ends
- Reinforced strain relief
- 1.5 meter silicone-insulated wire resists heat & cold
- CAT IV 600 V, CAT III 1000 V, 10 A rating. UL listed

TL224 SureGrip™ Silicone Test Lead Set

- DMM test leads (red, black) with safety shrouded, standard diameter banana plugs
- Right angle connector on one end and straight connector on the other
- Reinforced strain relief
- 1.5 meter silicone-insulated wire resists heat & cold
- CAT IV 600 V, CAT III 1000 V, 10 A rating. UL listed

TL27 Heavy Duty Test Lead Set

- DMM test leads (red, black) with safety shrouded, standard diameter banana plugs
- Heavy duty EPDM insulation
- Length 1.5 m
- CAT III 1000 V, 10 A rating. UL listed

Kits

TL220 SureGrip™ Industrial Test Lead Kit

- AC220 SureGrip™ Alligator Clip Set
- TP220 SureGrip™ Test Probe Set
- TL222 SureGrip™ Silicone Test Lead Set (right to right)

TL223 SureGrip™ Electrical Test Lead Kit

- AC220 SureGrip™ Alligator Clip Set
- TP1 Slim-Reach™ Test Probes (flat bladed)
- TL224 SureGrip™ Silicone Test Lead Set (straight to right)

TL238 SureGrip™ High Energy Test Lead Kit

- TP238 SureGrip™ Insulated Tip Test Probes with less than 4 mm of exposed metal (GS38) with flexible removable finger banner
- TP280 20 cm Test Probe Extenders
- TL224 SureGrip™ Silicone Test Lead Set

TLK-220 EUR SureGrip™ Accessory Kit

- AC220 SureGrip™ Alligator Clip Set
- AC285 SureGrip™ Large Jaw Alligator Clip Set
- TP74 Slim Reach Test Probe Set (4 mm)
- TL224 SureGrip™ Silicone Test Lead Set
- Large zippered soft case with moveable divider

TLK-225 SureGrip™ Master Accessory Kit

- AC220 SureGrip™ Alligator Clip Set
- AC280 SureGrip™ Hook Clip Set
- AC283 SureGrip™ Pincer Clip Set
- AC285 SureGrip™ Large Jaw Alligator Clip Set
- TP220 SureGrip™ Test Probe Set
- TL224 SureGrip™ Silicone Test Lead Set
- 6-Pocket Storage Pouch

TLK289 EUR Industrial Master Test Lead Kit

- C116, Soft Case
- AC220 Alligator Clip Set
- AC280 Hook Clip Set
- AC285 Large Jaw Alligator Clip Set
- TP74 Lantern Tip Test Probe Set
- TL224 Test Lead Set
- TPAK Hanging Kit
- 80BK-A Temperature Thermocouple

Industrial Test Leads, Probes & Clips

FLUKE®

Kits

ACC-T5-KIT Accessory Kit for use with T5

This kit completes the offering of a T5 with add-on probes and carrying case.
- TP220 SureGrip™ Test Probe Set
- AC285 SureGrip™ Large Jaw Alligator Clip Set
- C33 Soft Meter Case

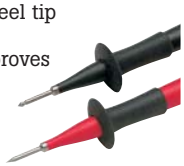
L215 SureGrip™ Kit with Probe Light and Extender

- L200 Probe Light
- TP280 20 cm Test Probe Extenders
- TP220 SureGrip Test Probes
- TL224 SureGrip Silicon Test Lead Set
- Foldable soft pouch with six pockets and hook-and-loop

Modular Test Probes

(for use with Modular Test Leads)

TP220 SureGrip™ Test Probe Set



- One pair (red, black) of Industrial test probes
- Sharp, 12 mm stainless steel tip provides reliable contact
- Flexible finger barrier improves grip
- Recommended for use with TL222 and TL224 test leads
- CAT IV 600 V; CAT III 1000 V, 10 A rating. UL listed

TP74 Lantern Tip Test Probe Set

- One pair (red, black)
- Tips include banana-style spring contacts with nickel-plated brass ends
- CAT III 1000 V, 10 A rating. UL listed

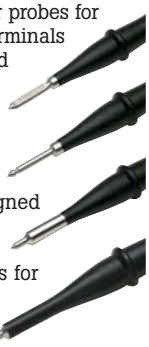
TLK290 Test Probe Kit

- Kit includes three flexible socket probes and a large alligator clip
- To be used on three phase sockets.
- Probes have flexible width test points that fit securely in 4 to 8 mm sockets.
- CAT III 1000 V, 8 A

Modular Test Probes

(for use with Modular Test Leads)

TP1, TP2, TP4, TP38 SlimReach Test Probe Sets



- One pair (red, black) of slender probes for closely spaced or recessed terminals
- **TP1:** Flat blade design to hold securely in blade type wall sockets
- **TP2:** 2 mm diameter tip for electronics work. Also compatible with AC72.
- **TP4:** 4 mm diameter tip designed to fit into IEC wall outlets
- **TP38:** Insulated probe tip (designed to meet GS38 specs for United Kingdom).
- CAT IV 600 V, CAT III 1000 V, 10 A rating, UL listed

TP80 Electronic Test Probe Set

Recommended for use with TL222 and TL224
- One pair (red, black)
- IC insulated cap prevents shortening of IC legs for probing high density components or boards
- CAT III 1000 V, 10 A rating. UL listed

Modular Clips

(for use with Modular Test Leads)

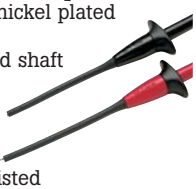
AC220 SureGrip™ Alligator Clip Set

- One pair (red, black) of small, insulated, nickel plated jaws
- Blunt tip grabs round screw heads up to 9.5 mm
- Recommended for use with TL222 and TL224 test leads
- CAT IV 600 V, CAT III 1000 V, 10 A rating. UL listed

AC280 SureGrip™ Hook Clip Set

- One pair (red, black) of nickel plated clips
- Profile narrows to 5.6 mm at tip, hook opening 6.4 mm at front, 2 mm at base
- Recommended for use with TL222 and TL224 test leads
- CAT IV 600 V, CAT III 1000 V, 3 A rating. UL listed

AC283 SureGrip™ Pincer Clip Set



- One pair (red, black) of nickel plated pincers open to 5 mm
- 11.4 cm flexible insulated shaft
- Recommended for use with TL222 and TL224 test leads
- CAT IV 600 V, CAT III 1000 V, 1 A rating. UL listed

Modular Clips

(for use with Modular Test Leads)

AC285 SureGrip™ Large Jaw Alligator Clip Set

- One pair (red, black) of large alligator clips with nickel-plated steel jaws
- Multi-purpose tooth pattern grips anything from fine gauge wire to a 20 mm bolt
- Recommended for use with TL222 and TL224 test leads
- CAT IV 600 V; CAT III 1000 V, 10 A rating. UL listed

AC87 Heavy Duty Bus Bar Clip Set

- One pair (red, black) of flat, right angle design for connecting to bus bars
- Adjustable collar provides 2 ranges of jaw openings up to 30 mm
- CAT III 600 V, 5 A rating. UL listed

AC89 Heavy Duty Insulation Piercing Test Clip

- Single probe pierces 0.25 to 1.5 mm insulated wire
- Small pin allows self-healing of the insulation
- CAT IV 600V, CAT III 1000 V, 5 A rating. UL listed

TLK291 Fused Test Probe Set

- One pair (red, black) fused test probes
- Designed to meet GS38 specs for United Kingdom
- CAT III 1000V, 0.5A
- Fuse rating: 500 mA/1000 V/FF/50 kA

Push-on Clip

(for use with TL71 and TL75 Test Lead Sets)

AC72 Alligator Clip Set

- Slide-on alligator clips (red, black) for TL71/TL75
- Jaws provide 8 mm opening
- CAT IV 600 V, CAT III 1000 V, 10 A rating. UL listed

All accessories have a one year warranty

Current Clamps

FLUKE ®

i5s

i50s

i200

i200s

i400

i400s

Specifications AC models

	i5s	i50s	i200	i200s	i400	i400s
Nominal current range(s)	5 A	3/30 AC RMS or DC	200 A	20 A 200 A	400 A	40 A 400 A
Continuous AC current range	0.01 A - 6 A	30 A cont. 50 A <10 sec	0.5 A - 200 A	0.1 - 24 A 0.5 A - 200 A	5 A - 400 A	0.5 - 40 A 5 A - 400 A
Highest current	70 A	30 A cont. 50 A <10 sec	240 A	240 A	1000 A	1000 A
Lowest measurable current	10 mA	10 mA	0.5 A	0.5 A	1 A	0.5 A
Basic accuracy (48-65 Hz) [1]	1%	± 0.5 % typical DC to 100 kHz	1% + 0.5 A	1.5% + 0.5 A	2% + 0.15	2% + 0.15
Useable frequency	40 Hz - 5 kHz	Dc to 50 MHz	40 Hz – 10 kHz	40 Hz – 10 kHz	45 Hz - 3 kHz	45 Hz - 3 kHz
Max. working voltage	600 V AC	300 V AC RMS or DC	600 V AC	600 V AC	1000 V	1000 V
Maximum conductor diameter	15 mm	5 mm	20 mm	20 mm	32 mm	32 mm
Output level(s)	400 mV/A	1/100 mV/A	1 mA/A	100 mV/A 10 mV/A	1 mA/A	10 mV/A 1 mV/A
Batttery, battery life		External Power				
Output cable (m)	2.5	2 m	1.5	2.0	1.5	2.5
Shrouded banana plugs			●		●	
BNC connector	●	●		●		●
BNC to banana adapter included				●		
Safety	CAT III, 600 V	CAT I 300 V	CAT III, 600 V	CAT III, 600 V	**CAT III 1000 V / CAT IV 600 V**	**CAT III 1000 V / CAT IV 600 V**

[1] Basic Accuracy: % reading + floorspec

i800

i1000s

i2000 flex

i3000s flex

i3000s

i6000s

	i800	i1000s	i2000 flex	i3000s flex-24 i3000s flex-36	i3000s	i6000s flex-24 i6000s flex-36
Nominal current range(s)	800 A RMS	10 A 100 A 1000 A	20 A 200 A 2000 A	30 A 300 A 3000 A	30 A 300 A 3000 A	60 A 600 A 6000 A AC
Continuous AC current range	0,1 A - 800 A RMS	0.1 A - 10 A 0.1 A - 100 A 1 A - 1000 A	1 A - 20 A 2 A - 200 A AC RMS 30 A - 2000 A	1 A - 30 A 2 A - 300 A AC RMS 30 A - 3000 A	1 A - 30 A 1 A - 300 A 1 A - 2400 A	1 A - 6000 A AC RMS
Highest current	1500 A	2000 A	2500 A AC RMS	3500 A AC RMS	4000 A	6000 A
Lowest measurable current	0,1 A	0,1 A	1 A	1 A	1 A	1 A
Basic accuracy (48-65 Hz) [1]	0.10%	1% + 1 A	1%	1%	2% + 2 A	± 1% of range
Useable frequency	30 Hz - 10 kHz	5 Hz – 100 kHz	10 Hz - 20 kHz (-3dB)	10 Hz - 50 kHz (-3dB)	10 Hz - 100 kHz	10 Hz to 50 kHz
Max. working voltage	600 V AC RMS or DC	600 V AC	600 V AC RMS	600 V AC RMS	600 V AC	600 V AC RMS or DC
Maximum conductor diameter	54 mm	54 mm	178 mm	Flex-24 178 mm Flex-36 275 mm	64 mm	Flex-24 170 mm Flex-36 275 mm
Output level(s)	1 mA/A	100 mV/A 10 mV/A 1 mV/A	100 mV/A 10 mV/A 1 mV/A	100 mV/A 10 mV/A 1 mV/A	10 mV/A 1 mV/A 0.1 mV/A	50 mV/A 5 mV/A 0.5 mV/A
Batttery, battery life			200 hours	400 hours		400 hours
Output cable (m)	1.6 m	1.6	0.5	0.5	2.1	0.5 m
Shrouded banana plugs	●		●	n/a		
BNC connector		●	n/a	●	●	●
BNC to banana adapter included			n/a	●	●	●
Safety	CAT III 600 V	CAT III, 600 V	CAT III, 600 V	CAT III, 600 V	CAT III, 600 V	CAT III, 600 V

[1] Basic Accuracy: % reading + floorspec

Current Clamps

80i-110s

i30

i30s

i310s

i410

i1010

Specifications AC/DC Models

	80i-110s	i30	i30s	i310s	i410	i1010
Measurement type	Hall sensor	Hall sensor	Hall sensor	AC/DC	Hall sensor	Hall sensor
Nominal current range(s),	10 A, AC/DC 100 A, AC/DC	20 A AC RMS or DC	20 A AC RMS or DC	30/300 A AC RMS or 45/450 A DC	400 A, AC/DC	600 A, AC 1000 A, DC
Continuous current range	0.1A – 10 A AC/DC 1 A – 100 A AC/DC	30 A AC Peak	30 A AC Peak	100 mA - 300 A AC RMS or 450 A DC	1 A – 400 A AC/DC	1 A – 600 A, AC 1 A – 1000 A, DC
Highest current	140 A – 2 kHz	30 A AC Peak	30 A AC Peak	300 A AC RMS or 450 A DC	400 A	1000 A
Lowest measurable current	0.1 A	50 mA	50 mA	100 mA	0.5 A	0.5 A
Basic accuracy [1]	3% + 50 mA (@ 10 A)	± 1% of reading ± 2mA	± 1% of reading ± 2mA	± 1% of reading	3.5% + 0.5 A	2% + 0.5 A
Useable frequency	DC – 100 kHz	DC to 20 kHz (-0.5dB)	DC to 100 kHz (-0.5dB)	DC to 20 kHz	DC – 3 kHz	DC – 10 kHz
Zero error adjustment	●	manual adjust via thumbwheel	manual adjust via thumbwheel	Manual	●	●
Max. working voltage	600 V	300 V AC RMS	300 V AC RMS	300 V AC RMS or DC	600 V	600 V
Maximum conductor diameter	11.8 mm	19 mm	19 mm	19 mm	30 mm 2 x 25 mm	30 mm 2 x 25 mm
Output level(s)	100 mV/A 10 mV/A	100 mV/A	100 mV/A	10/1 mV/A	1 mV/A	1 mV/A
Battery, battery life	9 V, 55 h	30 hours typical	30 hours typical	30 hours	9 V, 60 h	9 V, 60 h
Output cable length (m)	1.6	1.5	2	2 m	1.6	1.6
Shrouded banana Plugs		●	n/a		●	●
BNC connector	●	n/a	●	●		
BNC to banana adapter included		n/a	●	●		
Safety	CAT II, 600 V CAT III, 300 V	CAT III, 300 V	CAT III, 300 V	CAT III 300 V	CAT III, 600 V	CAT III, 600 V

[1] Basic Accuracy: % reading + floorspec

i410 Kit AC/DC Current Clamp (400A) with soft case

i1010 Kit AC/DC Current Clamp (1000A) with soft case

- Combination of current clamp with carrying case
- Zippered soft case with moveable divider
- Soft case is large enough to hold a meter

Current Clamp Compatibility Chart

	114/115/116/117	175/177/179	187/189	287/289	27	8845A/8846	8808A	77 IV	83V/87V	88V	43B	430 Series	123/124	125	190 Series	1577 / 1587	715	724	725	741B/743B/744	787	789
AC Models																						
i5s												●		●	●							
i200	●	●	●	●	●	●	●	●	●	●						●					●	●
i200s	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●				●	●	●
i400		●	●	●	●	●	●	●	●	●						●					●	●
i400s	2	2	2	2	2	2	2	2	2	2	●	●	●	●	●	2				2	2	2
i430 Flex												●										
i800	●	●	●	●	●	●	●	●	●	●						●					●	●
i1000s	2	2	2	2	2	2	2	2	2	2	●	●	●	●	●	2				2	2	2
i2000flex (new version)	●	●	●	●	●	●	●	●	●	●						●					●	●
i3000s	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●				●	●	●
i3000sflex	●	●	●	●	●	●	●	●	●	●						●				●	●	●
i6000s	●	●	●	●	●	●	●	●	●	●						●				●	●	●
AC/DC Models																						
i30	●	●	●	●	●	●	●	●	●	●						●					●	●
i30s	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●							
80i-110s	2	2	2	2	2	2	2	2	2	2	●	●	●	●	●	2				2	2	2
i310s																				●	●	●
i410 / i410 kit	●	●	●	●	●	●	●	●	●	●			3	3	3	●	1	1	1	●	●	●
i1010 / i1010 kit	●	●	●	●	●	●	●	●	●	●			3	3	3	●	1	1	1	●	●	●
Other																						
90i-610s*	2	2	2	2	2	2	2	2	2	2	●	●	●	●	●	2				2	2	2

* For specifications of 90i-610s see page 108

1 For DC only

2 Requires PM 9081 (see page 69)

3 Requires PM 9082 (see page 69)

All accessories have a one year warranty

Temperature Accessories

FLUKE®

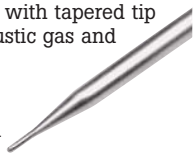
Contact Probes

80PK-22 SureGrip™ Immersion Probe
- Type-K thermocouple for use in liquids and gels
- Measurement range: -40 to 1090°C
- Probe length: 21.3 cm

80PK-24 SureGrip™ Air Probe
- Type-K thermocouple for use in air and non-caustic gas measurements
- Bead protected by perforated baffle
- Measurement range: -40 to 816°C
- Probe length: 21.6 cm

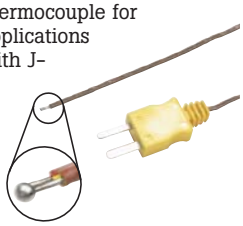
80PK-25 and 80PT-25 SureGrip™ Piercing Probe
- 80PK-25: Type-K thermocouple suitable for food industry, liquids and gels
- 80PT-25 operates with T-type thermometers
- Measurement range: 80PK-25: -40 to 350°C 80PT-25: -196 to 350°C
- Probe length: 10.2 cm

80PK-26 SureGrip™ General Purpose Probe
- Type-K thermocouple with tapered tip for use in air, non-caustic gas and surface applications
- Measurement range: -40 to 816°C
- Probe length: 21.2 cm

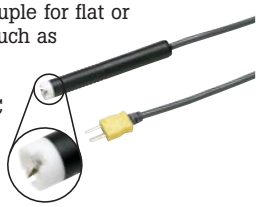


80PK-27 SureGrip™ Industrial Surface Probe
- Type-K thermocouple for surfaces in rugged environment
- Durable ribbon sensor
- Measurement range: -127 to 600°C
- Probe length: 20.3 cm

80PK-1 and 80PJ-1 Bead Probe
- 80PK-1: Type-K thermocouple for general purpose applications
- 80PJ-1 operates with J-type thermometers
- Measurement range: -40 to 260°C
- Probe length: 1 m lead wire

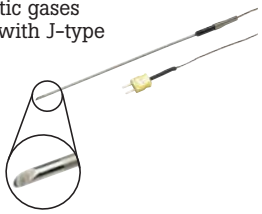


80PK-3A Surface Probe
- Type-K thermocouple for flat or curved surfaces such as plates and rollers
- Measurement range: 0 to 260°C
- Probe length: 9.5 cm



80PK-8 Pipe Clamp Temperature Probe
- Type-K thermocouple for fast temperature and superheat measurements of pipe surfaces
- Durable ribbon sensor
- Measurement range: -29 to 149°C for pipe diameters from 6.4 to 34.9mm

80PK-9 and 80PJ-9 General Purpose Probe
- 80PK-9: Type-K thermocouple surface, air and non-caustic gases
- 80PJ-9 operates with J-type thermometers
- Measurement range: -40°C to 260°C
- Probe length: 15.3 cm



80PK-11 Velcro Temperature Probe
- Type-K thermocouple for hands free measurement of HVAC temperature measuring applications
- Total length of cable: 1m (0.5m in cable, 0.5m in Velcro cuff insulation material; Hytrel)
- Measurement range: -30°C to 105°C

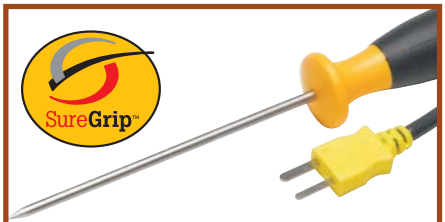
DMM Probes

80AK-A Thermocouple Adapter
- Adapts Type-K thermocouple mini-connector to dual banana plug inputs
- Measurement range and accuracy: probe dependent
- Suitable for low voltage applications (below 30 V AC, 60 V DC)

80BK-A Integrated DMM Probe
- Type-K thermocouple with standard banana jack
- Convenient one piece construction
- Compatible with DMMs with temperature measurement functions
- Measurement range: -40 to 260°C

80TK Thermocouple Module
- Converts a DMM to a thermometer
- For use with type-K thermocouples in low voltage applications (below 24 V AC, 60 V DC)
- Measurement range: -50 to 1000°C (probe dependent)

80T-150U Universal Temperature Probe
- Compatible with Fluke DMM
- High accuracy, fast reading for low voltage (below 24 V AC, 60 V DC) applications
- Measurement range: -50 to 150°C
- Output: 1 mV/°C or 1 mV/°F (switchable)



SureGrip™ accessories are designed to improve steadiness in slippery hands. Rubber overmolded surfaces and finger-hugging curves give the user a comfortable, reliable grip on the accessory so they can focus on making an accurate measurement.

Temperature Accessories

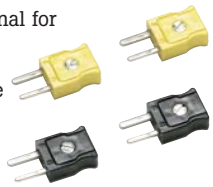
Other Temperature Accessories

80PR-60 RTD Temperature Probe

- For simulaneously taking contact and non-contact temperature measurements with Fluke 66 or 68
- Measurement range: -40 to 260°C

80CK-M & 80CJ-M type K & J Male Mini-Connectors

- Isothermal screw terminal for K or J wire
- Suitable for up to 20 guage thermocouple wire
- Color coded to industry standards (K-yellow, J-black)
- Two per package



Thermocouple Plug Kits

700TC1

A kit of 10 mini-plug connectors
Type J (black), one
Type K (yellow), one
Type T (blue), one
Type E (purple), one
Type R/S (green), one
Type B or CU (white), one
Type L (J-DIN) (blue), one
Type U (T-DIN) (brown), one
Type C (red), one
Type N (orange), one

80PK-EXT, 80PJ-EXT and 80PT-EXT Extension Wire Kits

- Extending and repairing J, K ot T-type thermocouple wires
- Kit includes 3 meters of thermocouple wire and 1 pair of male/female mini-connectors
- Maximum continuous exposure temperature: 260°C
- 80PK-EXT is compatible with K-type thermometers, 80PJ-EXT is designed for J-type thermometers and PT-EXT for T-type thermometers

700TC2

A kit of 7 mini-plug connectors
Type J (black), two
Type K (yellow), two
Type E (purple), one
Type T (blue), one
Type R/S (green), one

Temperature Probe Compatibility Chart

	114/115/116/117	175/177	179	287/289	27	8845A/8846A/8808A	77IV	83V	87V	88V	43B	120 Series	190 Series	1577	1587	51/52/53/54 II	561	566/568	66/68	705/707	714	715	724	725	741B/743B/744	787	789
Contact Probes																											
80PK-1 … 80PK-27	1	1	2	2	1	1	1	1	2	2	1	1	1	1	2	●	●	●		1	●	1	●	●	●	1	1
80PJ-1, 80PJ-9																●					●		●	●	●		
80PT-25	1															●					●		●	●	●		
DMM probes																											
80AK-A	●[3]		●	●					●	●					●												
80BK-A	●[3]		●	●					●	●					●												
80TK		●			●	●	●	●			●	●	●	●						●		●			●	●	●
80T-150U		●	●	●	●	●	●	●			●	●	●	●						●		●			●	●	●
Miscellaneous																											
80CK-M	1	1	2	2	1	1	1	1	2	2	1	1	1	1	2	●	●	●		1	●	1	●	●	●	1	1
80CJ-M																●					●		●	●	●		
80PK-EXT[4]	1	1	2	2	1	1	1	1	2	2	1	1	1	1	2	●	●	●		1	●	1	●	●	●	1	1
80PJ-EXT																●					●		●	●	●		
80PT-EXT																●					●		●	●	●		
700TC1, 700TC2																●					●		●	●	●		
80PR-60																			●								

1) Requires 80TK
2) Requires 80AK
3) Fluke 116 only
4) Also requires 80CK-M

All accessories have a one year warranty

Cases and Holsters

Soft Cases

Zippered carrying cases protect your meter; most cases come with belt loops so your meter is stored conveniently on your tool belt.


C12A


C23


C25


C33


New
C35


C570


C43


C50


C75


C90


New
C115


New
C116


C125/C781

C195
- Zippered carrying case with storage compartments
- Allows hand or shoulder use

C789
- Large fabric carrying case with 3 compartments, removable handle and shoulder strap

C550 Tool Bag
- Steel reinforced frame
- Rugged ballistic cloth with heavy duty hardware
- Large zippered storage compartment with 25 pockets
- Weather resistant
- Carry all your tools to the job

Cases & Holsters Compatibility Chart

		114/115/116/117	175/177/179	187/189	287/289	27	77 IV	83V / 87V / 88V	T5	T50	T100 Series	321/322	333/334/335/336/337/902	353/355	1503/1507/1577/1587	9040/9062	1735/1740 Series	430 Series	43B/120 Series	190 Series	922	971	51/52/53/54 II	561	566/568	570 Series	61	63/66/68	705 / 707	712/714/715/717	718	724/725/726	741B/743B/744	787	789
Soft Cases	**Size (HxWxD) mm**																																	
C12A	172 x 128 x 38	●																										●						
C23	225 x 95 x 58	●					●			●		●									●	●					●							
C25	218 x 128 x 64	●	●	●		●	●	●							●	●					●	●	●							●			●	●
C33	280 x 115 x 55						●				●		●																				●	
C35	220 x 140 x 65	●	●			●	●	●							●						●		●					●	●					●
C43	318 x 230 x 90			●										●					●												●	●		
C50	192 x 90 x 38	●																					●											
C75	179 x 103 x 26	For multiple test leads and accessories																																
C90	205 x 90 x 72		●				●														●													
C115	240 x 205 x 75	●	●			●	●	●							●				●				●					●	●	●				●
C116	240 x 230 x 65	●	●		●	●	●	●							●				●				●					●	●					●
C125	192 x 141 x 58			●				●							●				●		●										●	●		●
C195	231 x 513 x 231																	●	●	●														
C550	333 x 513 x 231	For multiple meters, test leads and accessories																																
C570	240 x 160 x 61																									●								
C781	269 x 141 x 90			●	●										●				●												●	●	●		●
C789	308 x 256 x 77																		●												●		●	●	●
Hard Cases																																		
C20	256 x 154 x 106			●		●																								●				
C100	397 x 346 x 122		●			●		●																						●			●	
C101	305 x 360 x 105		●	●		●		●	●		●	●	●		●	●						●	●				●		●	●	●		●	●
C120	346 x 397 x 128																		●															
C190	410 x 474 x 135																			●														
C435	565 x 476 x 305																●	●																
C800	230 x 385 x 115		●				●	●																						●			●	
C1600	260 x 390 x 200	For multiple meters, accessories and other tools																																
Leather Cases																																		
C510	287 x 179 x 106		●				●	●							●								●							●		●		●
C520A	256 x 154 x 106								●																									
Holsters																																		
C10	154 x 77 x 45																											●						
H80M	190 x 95 x 43							●													●									●			●	
Other																																		
H3	231 x 90 x 64											●	●																					
H5	192 x 90 x 38								●																									
H6	302 x 178 x 57																							●	●			●						
Hanging and Locking Kits (see page 109)																																		
ToolPak		●	●	●	●		●	●							●						●		●							●			●
LockPak				●																												●			●

Cases and Holsters

Hard Cases

C20 Meter Case

- Heavy duty case with carrying handle and accessories storage compartment
- Top cover snaps onto back to serve as tilt stand

C100 Meter and Accessory Case

- Tough polyprophylene case

C101 Hard Case

The hard case that fits all Fluke industrial test tools. Configure the diced foam interior to store and protect what you need to carry with you.
- Tough polyprophylene exterior shell
- Interior cavity measures

C120 and C190 Cases

- Heavy duty cases with accessory storage compartments

C435 Hard Rolling Case

- Water-tight hard case with rollers for 430 Series, 1735 and 1740 Series Power Quality products and accessories. The configurable foam securely holds any of these instruments during transit.

C800 Meter and Accessory Case

- Tough polyprophylene case
- Accessories and manual compartments
- Detachable lid

C1600 Meter and Accessories Case

- Rugged molded plastic case
- Deep interior large enough to hold and protect your tools
- Lift out tray keeps everything organized
- Snap open compartment on top of lid

Holsters

C10 Meter Holster

- Snap-on yellow holster absorbs shocks and protects meter from rough handling
- Includes built-in stand and hanger loop

C70Y Meter Holster

- Snap-on holster absorbs shocks and protects meter from rough handling.
- Flex Stand™ allows meter to hand, lean or stand for convenience and best viewing
- Built-in probe and lead storage

H80M Holster + Magnetic Hanger

- Snap-on yellow holster absorbs shocks and protects meter from rough handling
- Magnet, hook and loop straps
- General purpose hanger

H3 Clamp Meter Holster

- Fabric holster absorbs shocks and protects meter from rough handling.
- Built-in pocket for lead storage
- Convenient belt-loop with snap

H5 Electrical Tester Holster

- Rugged fabric holster includes flap for lead storage and built-in belt loop
- Fits Fluke T3 and T5 testers

H6 Infrared Thermometer Holster

- Durable nylon holster
- For Fluke 63, 66 and 68 Infrared Thermometers

Leather Cases

C510 Leather Meter Case

- Oiled genuine top grain cowhide
- Rugged construction with heavy duty stitching and reinforced rivets
- Large tool belt loop and top flap to secure meter
- Holds most Fluke DMMs, Thermometers, and Process Calibrators

C520A Leather Tester Case

- Oiled genuine top grain cowhide
- Oil tanned for long life
- Rugged construction with heavy duty stitching and reinforced rivets
- Large tool belt loop and top flap to secure tester
- Holds Fluke Electrical Testers

All accessories have a one year warranty

Automotive Accessories

Piercing Clips

TP81 and TP82 Insulation Piercing Clip Set

- Banana jack accepts all DMM and banana jack leads
- Available for 4 mm input, modular connection with TP81 or available as a 2 mm input to slip onto probe tips with the TP82
- Tested to 60 V DC

TP84 Oxygen Sensor Insulation Piercing Clip

- Banana jack accepts all DMM and banana jack leads (4 mm)
- Tested to 60 V DC

Probe Pins

TP88 Rigid Back Probe Pin Set

- Slides onto test probes measuring 2 mm
- Tested to 60 V DC

TP40 Automotive Back Probe Pins (five)

- Banana jack accepts all DMM and banana jack leads (4 mm)
- Tested to 60 V DC

Banana Plugs

BP880 BNC to Female Double Stacking Banana Plug
BP881 BNC to Male Double Stacking Banana Plug

BP880

BP881

- Allows for hands-free testing in controlled voltage environments 500 VRMS maximum
- Banana plug is nickel-plated, beryllium copper for low contact resistance
- The BNC shell is plated for tarnish resistance
- Operating temperature +50°C maximum

Pressure Module

PV350 Pressure Vacuum Module

- Compatible with all Fluke and most popular DMMs
- Digital pressure and vacuum measurements in a single module
- Transducer sealed in 316 stainless steel compatible with variety of liquids and gases
- Measures vacuum to 76 cm Hg
- Display results in English (psig or Hg) or metric (kPa or cm Hg) units
- Measures pressure to 500 psig (3447 kPa)

Test Leads

TL28A Automotive Test Lead Set

- Flexible silicone insulated leads are heat and cold resistant
- Cat I 30 V, 10 A

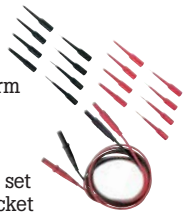
TLK281 SureGrip™ Automotive Test Lead Kit

Kit contains:
- TP81 Insulation Piercing Clip Set
- TL224 Suregrip™ Silicone Test Lead Set
- TP220 Suregrip™ Test Probe Set
- AC220 Suregrip™ Alligator Clip Set
- AC285 Suregrip™ Large Jaw Alligator Clip Set
- Soft Case

TLK282 SureGrip™ Deluxe Automotive Test Lead Kit

Kit contains:
- TP81 Insulation Piercing Clip Set
- TP40 Automotive Back Probe Pins (five)
- TL224 Suregrip™ Silicone Test Lead Set
- TP220 Suregrip™ Test Probe Set
- AC220 Suregrip™ Alligator Clip Set
- AC285 Suregrip™ Large Jaw Alligator Clip Set
- AC280 Suregrip™ Hook Clip Set
- Soft Case

TL 82 Automotive Pin & Socket Adapter Kit



This set of male and female adapters allows you to make firm connection to pin and socket connectors.
Kit contains:
- Retractable shrouded test lead set
- Complete set of 8 pin-and-socket adapters with flexible tips
- One red and black in different sizes
- Rated to 60 V DC

Current Probe

90i-610s AC/DC Current Probe (600 A)

- Current Range: 2 to 600A DC or AC Peak
- Basic Accuracy (DC to 400Hz): ± (2% of reading + 1A)
- Output Signal: 100A range: 10mV/A 600A range: 1mV/A
- Frequency Range: 40Hz to 400Hz
- Working Voltage: 600V AC rms
- Maximum Conductor Diameter: 34 mm

Inductive Pick-up

RPM80 Inductive Pick-up

- Provides RPM readings

ScopeMeter Accessory Kits

SCC128 Automotive Accessory Kit (120 Series)

SCC198 Automotive Accessory Kit (190 Series)

These kits provide a host of accessories that allow you to easily and quickly make measurements on automotive electronic systems using a 120 or 190 Series ScopeMeter.

Software and other Accessories

Software FlukeView® Forms

FlukeView Forms increases the power of your Fluke tool by enabling you to document, store and analyze individual readings or series of measurements, then convert them into professional-looking documents. FlukeView Forms supports the following multimeters:

FlukeView Forms Compatibility Chart

FVF Option	Instrument	Cable**	Application Level
FVF-UG	Software only upgrade, Fluke 568, 975, 983	No Cable included	FVF Full (includes Designer)
FVF-SC1	Fluke 53-II, 54-II, 87-IV*, 89-IV*	Serial / IRDA	
FVF-SC2	Fluke 280 Series, 789, 1550B, 1653, 180 Series*	USB / IR	
FVF-SC4	Fluke 8808A, 8845A, 8846A, 45*	USB / Serial	
FVF-BASIC	Fluke 280 Series, 789, 1550B, 1653, 180 Series*	USB / IR	FVF BASIC
FVF-SC5	8808A, 8845A, 8846A, 45*	USB / Serial	

* Obsolete

** USB cables are not supported for Microsoft Windows NT 4.0

IR189USB
IR to USB interface cable
(included with FVF-SC2 and FVF-Basic)
- For customers who want to upgrade from their existing RS232 cable
- Small adapter to connect the cable to the 189, 287, 289, 1653 or the 1550B is included.
- CD-Rom with drivers for use with older versions of FVF-SC1 included.

Make extended logging easier

BP189 High Capacity Battery Enclosure
(for Fluke 180 Series DMM)
- Expand the battery life of your Fluke 187/189 up to 450 hours (over two weeks of continuous use).
- Houses 4 'C' cell batteries.
- CAT III 1000 V, CAT IV 600 V

Batteries and meter sold separately

Hanging & Locking Kits

ToolPak (TPAK)
The meter hanging solution
- Kit includes, universal hanger clips (2), hook & loop straps (2 lengths) and strong magnet
- Combine components to meet most hanging needs

See page 106 for compatibility chart

LockPak (LPAK)
The meter locking solution
- Kit includes a locking accessory
- Accepts most common locks (not included)

See page 106 for compatibility chart

Fiber Optics

FOM Fiber Optic Meter
The Fluke Fiber Optic Meter (FOM) helps you test and maintain fiber optic cables without having to buy a whole new meter. Plug the FOM directly into any DMM with a mV dc function and a 10 MK input impedance and quickly and accurately verify fiber optic cable system loss. Light sources and patch cords sold separately.

FOS 850 & FOS 850/1300
Fiber Optic Light Sources
A variety of light sources allow you to test different cable lengths.

All accessories have a one year warranty

Other Accessories

Lights

L200 Probe Light

- Attaches to any Fluke test probe
- Bright white LED
- 120 hours of battery life

L205 Mini Hat Light

Rugged high-intensity Xenon worklight

- Attaches to a baseball cap
- Includes a hat clip
- Includes two AAA batteries
- Waterproof

L206 Deluxe LED Hat Light (hard hat not included)

Attach it to a hard hat, a baseball cap, or even a panel door for all the light you need.

- 3 super bright white LEDs – never burn out
- Special hard-hat attachment included
- 40-hour battery life
- Includes three AAA batteries

L210 Probe Light + Probe Extender

- Includes L200 Probe Light and TP280 Test Probe Extenders
- 20 cm probe extenders keep hands away from live circuits
- Extender fits between modular test probe and test lead (total reach 30 cm)

Stray Voltage Adapter

SV225 Stray Voltage Adapter (10-pack)

Stray voltage can appear in electrical installations, due to the capacity between wires. This may result in erroneous readings on high impedance meters.

The SV225 solves this without compromising safety.

- On energized wires, the meter will indicate the real voltage.
- On non-energized circuits the meter will read close to zero (even if there are stray voltages).

- It can be used with all modern meters with standard input spacing.
- Rated CAT III 1000 V, CAT IV 600 V

TL225 SureGrip™ Stray Voltage Adapter Test Lead Kit

Kit includes:

- SV225 Stray Voltage Eliminator
- TL224 SureGrip™ Silicone Test Lead Set (right to straight)
- TP220 SureGrip™ Test Probe Set
- C75 Accessory Case

High Voltage Probes

80K-6 and 80K-40

A high voltage probe that allows a multimeter to measure up to 6,000V or 40,000V respectively.
Intended for low energy applications only

Meter Cleaners

MC6 MeterCleaner™ Wipes (6-pack)

MC50 MeterCleaner™ Wipes (50-pack)

- Pre-moistened wipe removes dirt, oil and grease
- One wipe easily cleans one meter
- Safe on rubber, plastic and for environment (non-toxic)

All accessories have a one year warranty

Product Quick Find List

FLUKE®

Fuse and Warranty Information

Fuse Replacement Information

A	V	IR	Size in mm	Part nr qty 1
125mA	250V		5x20	4822 070 31251
63mA (slow)	250V		6.35x32	163030
125mA (slow)	250V		6.35x32	166488
250mA (slow)	250V		6.35x32	166306
315 mA	1000V	10KA	6.35x32	2279339
440mA	1000V	10kA	10.3x34.9	943121
500mA	250V	1500A	5x20	838151
630mA	250V	1500A	5x20	740670
1A	600V	10kA	10.3x34.9	830828
1.25A	500V		6.35x32	2040349
3A	600V	10kA	10.3x38.1	475004
3.15A	500V		6.35x32	2030852
11A	1000V	17kA		Replaced by 11A, 1000V, 20kA fuse; 803293
11A	1000V	20kA	10.3x38.1	803293
15A	600V	100kA	10.3x38.1	820829
20A	600V	Replaced by 15A, 600V, 100kA fuse; part nr. 820829		

See the back of your Fluke test tool or user manual for the fuses installed.
For manuals check the Fluke website in the product section.
For Fuse Replacement Guide check the Fluke website in the service section.

Product Warranty

Each Fluke product is warranted to be free from defects in material and workmanship under normal use and service, for the warranty period listed unless local law requires a longer period. The warranty period is listed in the ordering information section of the product specification and begins on the date of shipment. This warranty extends only to the original buyer or end-user customer of a Fluke authorized reseller, and does not apply to fuses, disposable batteries or to any product which, in Fluke's opinion, has been misused, altered, neglected or damaged by accident or abnormal conditions of operation or handling. Fluke warrants that software will operate substantially in accordance with its functional specifications for 90 days and that it has been properly recorded on non-defective media. Fluke does not warrant that software will be error free or operate without interruption.

Lifetime Warranty

Each Fluke 20, 70, 80, 170, 180 and 280 Series DMM purchased after October 1, 1996 will be free from defects in material and workmanship for its lifetime. This warranty does not cover fuses, disposable batteries and damage from accident, neglect, contamination, misuse or abnormal conditions of operation or handling, including overvoltage failures caused by use outside the DMM's specified rating, or normal wear and tear of mechanical components. This warranty covers the original purchaser only and is not transferable. For ten years from the date of purchase, this warranty also covers the LCD. Thereafter, for the lifetime of the DMM, Fluke will replace the LCD for a fee based on then current component acquisition costs.

To establish original ownership and prove date of purchase, please complete and return the registration card accompanying the product.

Service

Fluke will, at its discretion, repair at no charge, replace or refund the purchase price of a defective product purchased through a Fluke authorized sales outlet and at the applicable international price. Fluke reserves the right to charge for importation costs of repair/replacement parts if product purchased in one country is sent for repair elsewhere.

Send defective product with a description of the problem to the nearest Fluke Authorized Service Center, postage and insurance prepaid. Fluke will pay return transportation for product repaired or replaced in-warranty. Before making any non-warranty repair, Fluke will estimate cost and obtain authorization, then invoice you for repair and return transportation.

THIS WARRANTY IS YOUR ONLY REMEDY. NO OTHER WARRANTIES, SUCH AS FITNESS FOR A PARTICULAR PURPOSE, ARE EXPRESSED OR IMPLIED. FLUKE IS NOT LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LOSSES, INCLUDING LOSS OF DATA, ARISING FROM ANY CAUSE OR THEORY. AUTHORIZED RESELLERS ARE NOT AUTHORIZED TO EXTEND ANY DIFFERENT WARRANTY ON FLUKE'S BEHALF.

Since some states do not allow the exclusion or limitation of an implied warranty or of incidental or consequential damages, this limitation of liability may not apply to you.

Other catalogs from Fluke

In addition to the products featured in this Test Tools Catalog, Fluke also offers a variety of other products, an overview of which is shown in the following catalogs.

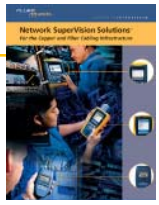
Fluke Precision Measurement products

Total Solutions in Precision Measurement

A variety of products covering DC/LF Electrical Calibration, Power Calibration, Calibration Software, Pressure Calibration, Time and Frequency, Temperature and Humidity Calibration including Hart Scientific, as well as Data Acquisition and General Purpose Test products like arbitrary waveform generators and VXI products.

To get a copy, please click "Request a catalog" on your local Fluke web site.

Fluke Networks products



Network SuperVision Solutions for the Copper and Fiber Cabling Infrastructure.

The most comprehensive line of premises network testing tools for the inspection, verification, certification and documentation of copper and fiber optic cabling systems.

Networks Supervision Solutions for the testing, monitoring and analysis of enterprise networks.

Our Distributed Vision Solutions enable centralized analysis with deep and wide visibility of what's happening throughout your network in all areas such as VoIP, Wireless and WAN.

To get a copy, please contact the local Fluke Networks sales organization: **www.flukenetworks.com/contact**.

Fluke. *Keeping your world up and running.®*